## SEQUENCE LISTING

Hillos Duvick, Jonathan P. Gilliam, J.cob T. Maddox, Joyce R. Rao, Aragula Gururaj Crasta, Oswald R. Folkerts, Otto

 $\pm 1200\pm$  Amino Polypl Amine Oxidase Polynucleotides and Related Polypeptides and Methods of Use

3135 - 1134R

H141.4 UN (9/658,838

\*1141. 2 \*0 (+09-t\*)

H1513 UN AR 1392,936

11940 1199-07-09

911:30 US 40:138,391

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9:150: DA 09:4352,159

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+1700 PatentIn version 3.1

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KU111: 372

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· [] [](0):-

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timeaigg.tg toggtaacga aaccaccacc ttttt	gette ggaacaegge gecegaggee — 12
quitoqta:tg tacageegga tgeegaetge teaat	ttcag cgacgggggt gttgaggtgc - 18
3.5	18
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gag Gli	geg Ala	atg Met 35	gat Asp	cgt Arg	gta Val	ggg Gly	3ga 317 40	aag Lys	act Thr	ctg Leu	agc Ser	gta Vil 45	caa Gln	tog Ser	ggt Gly		1.1.1
dod Pro	gly gg:	agg Arg	acg Thr	aost Thr	atc Ile	aac Asn 55	gae Asp	oto Leu	gge Gly	gct Ala	gcg Ala 60	tgg Trp	atc Ile	aat Asn	gac Asp		19.3
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ggc	gag Glu	Leu	cay Gin	agg Ang 35	acg Thr	act Thr	gja Gly	aat Asn	toa Ser 90	atc [le	cat His	Sia Gln	jca Ala	caa Gln 95	дас Азр		23:
ggt Gly	aca Thr	acc Thr	ast Thr 100	a ta Thr	get Ala	act Pro	tat. Tyr	ggt Gly 105	gae Asp	toc 3er	ttg Leu	ot.g Leu	agc Ser 110	gag Glu	gag Glu		330
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gaa Glu	gag Glu 130	cat His	a jo Ser	att Leu	caa Gln	gac Asp 135	etc Leu	aag Lys	gog Ala	agc Ser	cct Pro 140	cag Gln	gog Ala	aag Lys	ogg Ang	,	4.30.
oto Leu 145	gac Asp	agt Ser	gtg Val	agc Ser	tto Phe 150	gog Ala	cac His	tac Tyr	tgt Cys	gag Glu 155	aag Lys	gaa Glu	cta Leu	aac Asn	ttg Lou 160	,	13u
cct Pro	gct Ala	gtt Val	ete Leu	gge Gly 165	gta Val	gca Ala	aac Asn	cag Gln	atc Ile 170	aca Thr	cgc Arg	got Ala	ctg Leu	ctc Leu 175	ggt Gly	į.	528
gtg Val	gaa Glu	gdd Ala	cac His 180	gag Glu	atc Ile	agc Ser	atg Met	ott Leu 185	ttt Phe	ata Leu	acc Thr	gac Asp	tac Tyr 190	atc Ile	aag Lys	ţ	576
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cag Gln	tat Tyr 210	atg Met	oga Arg	tgc Cys	aaa Lys	aca Thr 215	ggt Gly	atg Met	cag Gln	tog Ser	att Ile 220	tgc Cys	cat His	gcc Ala	atg Met	ę	572
tida Ser 225	aag Lys	gaa Glu	ctt Leu	gtt Val	oca Pro 230	ggc Gly	tca Ser	gtg Val	cac His	ctc Leu 235	aac Asn	acc Thr	ccc Pro	gtc Val	got Ala 240		720
gaa	att	gag	cag	tcg	gca	tcc	gác	tgt	aca	gta	cga	tcg	gcc	tcg	gge	-	768

Glu	Ile	Glu	Gln	Ser 245	Ala	Ser	Gly	Cys	Thr 250	Val	Arg	Ser	Ala	3er 235	Gly	
		ttc Pne														₽16
		abo Thr 273														P 64
		gaa Glu														*11
		PAs aad														,± <u>6</u> (
		tặt Cys														1008
		caa Gln														1056
		tod Ser 355														1104
		aga Arg														1152
		gtg Val														1000
	-	agc Ser	-	-		_			-				_		_	1048
		aga Arg	_	_		_	-	-			_				_	1: 96
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Pro Gly Arg Thr Thr Tle Asn Asp Leu Gly Ala Ala Trp Ile Asn Asp 50 55 60

Ser Ash Gin Ser Glu Mal Ser Arg Leu Phe Glu Arg Phe His Leu Glu 60 70 75 30

Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln Asp 85 90 95

Gly Thr Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu 100 105 110

Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile 115 120 125

Giu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys Arg 130 135 140

Leu Asp Ser Val Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Asn Leu 145 150 155 160

Pro Ala Val Leu Gly Val Ala Asn Gln Ile Thr Arg Ala Leu Leu Gly 165 170 175

Val Glu Ala His Glu Ile Ser Met Leu Phe Leu Thr Asp Tyr Ile Lys 180 165 190

Ser Ala Thr Gly Leu Ser Asn Tie Phe Ser Asp Lys Lys Asp Gly Gly 195 205

Gln	Tyr 210	Met	Arg	Cys	Lys	Thr 215	Gly	M⊷t	Gln	Ser	Ile 220	Суз	His	Ala	Met
Ser 225	Lуз	Glu	Leu	Val	Pro 230	317.	3er	Viti	His	Leu 235	Asn	Fric	Pro	Val	Ala 240
Glu	Ile	Glu	Gln	3er 245	Ala	Ser	Sly	Cys	Thr 250	Val	Arg	3er	Ala	Ser 255	Gly
Ala	Val.	2he	Arg 260	Ser	Lys	Lys	Val	Va.1 265	Val	Ser	Leu	Pro	Thr 270	Thr	ren
Tyr	Pro	Thr 275	Leu	Thr	Phe	Ser	Pro 280	Pro	Te.″	Pro	Alā	Glu 285	Lys	Gln	Ala
Leu	Ala 291	Glu	Asn	Ser	Ile	Leu 295	Gly	Tyr	Tyr	Ser	Lys 300	[1⊕	Val	Phe	Val.
Trp 305	Asp	Lys	Pro	Trp	Trp 310	Arg	Glu	Gln	Gl;	Phe 315	Ser	Gly	Val	Leu	G1r. 320
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Ala	Pro	Ser	Alā	Val 405	Tyr	Gly	Leu	Asn	Asp 410	Leu	Ile	Thr	Leu	Gly 415	Ser
Ala	Leu	Arg	Thr 420	Pro	Phe	Lys	Ser	Val 425	His	Phe	Val	Gly	Thr 430	Glu	Thr

Ser Leu Val Trp Ly 435	vs Gly Tyr Met 440	•	e Arg Ser Gly 445	Gln
Arj Gly Ala Ala 31 450	u Val Val Ala 455	Ser Leu Val Pro 461		
03108 7 0311 + 1442 0312 + DMA 0313 + Exophiala s	pinifera			
00.20 + 00.3 + 00.22 + (1)(645) + 0.023 +				
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+:210.4 +:211.4 CDS +:212.4 (099)(148 +:213:4	9)			
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gtt goa agt goa ott gog gaa oto oto ooc gta tgg tot bag otg ato Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile 115 120 125	394
gaa gag bat ago bit baa gab bib aag gog ago obt bag gog aag bgg Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys Arg 130 135 146	43.3
oto gad agt gtg ago tto gdg bab tab tgt gag dag gda ota ago ttg Leu Asp Ser Val Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Ash Leu 145 - 150 - 156	4 R )
oot got git oto ggo gia goa aab oag ato ada ogo got oig bio ggi Pro Ala Val Leu Gly Val Ala Ash Gln Ile Thr Arg Ala Leu Leu Gly 165 176 176	E.19
gtg gaa joo dab gag atd ago wtg ott tit otb abo gad tab atd aag Val Glu Ala Eis Glu Ile Ser Met Deu Phe Deu Thr Asp Tyr Ile Dys 180 135 190	5.00
agt god add ggt otd agt dat utt tto tog gad dag add gad ggd ggd Ser Ala Thr Gly Leu Ser Ash Ile Phe Ser Asp Lys Lys Asp Gly Gly 195 205	601
dag tat gig oga igo aaa aba ggigogigig gigtogioto aggiggigga Gln Tyr Val Arg Cys Dys Thr 210 215	675
stogtttots agtiggtoatt oda iggn atg dag tog att tigs dat igds atg toa Gly Met Gln Ser Ile Cys His Ala Met Ser	
The state of the s	
aag gaa ott git ooa ggo toa gig oad otd aad abb ood gib got gaa Lys Glu Leu Val Pro Gly Ser Val His Leu Asn Thr Pro Val Ala Glu	
aag gaa ott gtt ooa ggo tos qtg oad otd aac acc ood gto got gaa Lys Glu Leu Val Pro Gly Ser Val His Leu Asn Thr Pro Val Ala Glu 230 235 240 att gag oag tog goa tod ggo tgt aca gta oga tog god tog ggo god Ile Glu Gln Ser Ala Ser Gly Cys Thr Val Arg Ser Ala Ser Gly Ala	7 - 0)
aag gaa ott gtt ooa ggo toa qtg oad otd aad abb ood gtb got gaa Lys Glu Leu Val Pro Gly Ser Val His Leu Asn Thr Pro Val Ala Glu 230 238 240 att gag oag tog goa too ggo tgt ada gta oga tog god tog ggo god Ile Glu Gln Ser Ala Ser Gly Cys Thr Val Arg Ser Ala Ser Gly Ala 245 250 285	77.6 804
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aag gaa off gff ooa ggo toa qfg oad off aac acc acc gco gfc gcf gaa Lys Glu Leu Val Pro Gly Ser Val His Leu Asn Thr Pro Val Ala Glu 230 att gag cag tog gca toc ggo tgt aca gfa cga tog gcc tog ggc gcc Ile Glu Gln Ser Ala Ser Gly Cys Thr Val Arg Ser Ala Ser Gly Ala 250 att gag ttc oga ago aca acg gtg gtg gtt tog tta cog aca acc ttg tat Val Phe Arg Ser Lys Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr 260 acc acc ttg aca ttt toa oca oct off gcg gag acg gcg gcg gcg acc acc ttg aca ttt toa oca oct off gcg gag acg acg gag acg can gca ttg pro Thr Leu Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu 275 acc acc acc ttg aca act off gcg gag acc acc acc ttg acc acc acc acc acc acc acc acc acc ac	920 920

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tgg	g too Ser 385	-eln	cag Gln	tcc Ser	aag Lys	cag Gln 360	Val	oga Ary	caa Gln	lag Lys	tct Ser 365	Va.l	tgg Trp	gac Asp	caa Gln	1
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Gly	Thr	ľhr	Thr 100	Thr	Ala	Pro	Tyr	Gly 105	Asp	Ser	Leu	Leu	Ser 110	Glu	Glu
Val.	Ala	3er 115	Ala	Leu	Ala	Glu	Lera 121	Leu	Pro	Vāl	Trp	Ser 125	Glr.	Leu	Ile
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Leu 145	Asp	3er	Vāl	Ser	Phe 130	Ala	His	Tyr	Суя	Glu 155	Lys	Glu	Leu	Asrı	Leu 160
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Gln	Tyr 210	Val	Arg	Cys	Lys	Th.r 215	Gly	Met	Gln	S∈r	Ile 220	Cys	Hıs	Ala	Met
Ser 225	Lys	Glu	Бeu	Val	Pro 230	Gly	Ser	Val	His	Leu 235	Asn	Thir	Pro	Val	Ala 240
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Ala	Val	Phe	Arg 260	Ser	Lys	Lys	Val	Val 265	Vāl	Ser	Leu	Pro	Thr 270	Thr	Leu
Tyr	Pro	Thr	Leu	Thr	Ph∙e	Ser	Pro 285	Pro	Leu	Pro	Ala	Gl.u 285	Lγε	Gln	Ala

Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val 290 295 300 Trp Asp Lys Pro Trp Trp Ang Glu Gln Gly Phe Ser Gly Val Leu Gln 310 315 320 Ger Ger Cys Asp Pro Ile Sor Phe Ala Arg Asp Thr Ser Ile Asp Val 325 330 Asp Arg Gln Trp Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly Arg 345 340 Lys Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp Asp 355 360 365 Gin Leu Arg Ala Ala Tyr Giu Asr. Ala Giy Ala Gin Val Pro Glu Pro 376 375 380 Ala Asr. Val Leu Glu Ile Glu Trp Ser Lys Gln Glr. Tyr Phe Gln Gly 385 39C 395 400 Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser 405 416 415 Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu Thr 420 425 Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln 435 440

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·1211: 458

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+12125 PRT

-1213> Exophiala spinifera

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Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala

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460

20 25 30

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		35					4 ()					45			-

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- Ser Asn Gln Ser Glu Val Ser Arg Leu Fhe Glu Arg Phe His Leu Glu 65 70 75 80
- Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln Asp  $85 \hspace{1.5cm} 90 \hspace{1.5cm} 95$
- Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu 100  $$105\$
- Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile 115 120 125
- Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Fro Gln Ala Lys Arg 130 135 140
- Leu Asp Ser Val Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Asn Leu 145 150 155 160
- Pro Ala Val Leu Gly Val Ala Asn Gln Ile Thr Arg Ala Leu Leu Gly 165 170 175
- Val Glu Ala His Glu Ile Ser Met Leu Phe Leu Thr Asp Tyr Ile Lys 180 185 190
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Ser Leu Lys Leu Ser Ser Arg His Pro Ala Val Gln Tyr Asp Arg Pro 260265 Arg Ala Pro Cys Ser Glu Ala Lys Arg Trp Trp Phe Arg Tyr Arg Gln 280 Pro Cys Ile Pro Pro His Phe His His Leu Phe Pro Pro Arg Ser Lys 295 300 290 His Trp Arg Lys Ile Leu Ser Trp Ala Thr Ile Ala Arg Ser Ser Tyr 305 310 315 Gly Thr Ser Ang Gly Gly Ala Asn Lys Ala Ser Ang Ala Ser Ser Asn 325 330 335 Arg Ala Val Thr Pro Ser His Leu Pro Glu Ile Pro Ala Ser Thr Ser 345 fle Asp Asn Gly Pro Leu Pro Val Ser Trp Ser Glu Thr Arg Asp Gly 355 360 365 Ser Gly Pro Asn Ser Pro Ser Arg Tyr Asp Lys Ser Leu Ser Gly Thr 375 380 Asn Ser Ala Gln Pro Thr Arg Thr Pro Gly Pro Lys Ser Gln Ser Arg 385 390 Pro Thr Cys Ser Lys Ser Ser Gly Arg Ser Ser Ser Ile Ser Lys Glu 410 415 Leu Arg Ala Pro Ser Met Gly Thr Ile Ser Ser His Trp Val Arg Arg 420 425 430 Ser Glu Arg Arg Ser Arg Val Phe Ile Ser Leu Glu Arg Arg Arg Leu 435 440 445 Phe Gly Lys Gly Ile Trp Lys Gly Pro Tyr 450 455

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gac ago aac caa Asp Ser Asn Gln 65		Ser Arg Leu P		
gag ggo gag oto Glu Gly Glu Leu				
gac ggt aca acc Asp Gly Thr Thr 100			·	
gag gtt gca agt Glu Val Ala Ser 115	Ala Leu Ala			
ato gan gag cat Ile Glu Glu His 130				
ogg etc gac agt Arg Leu Asp Ser 145		Ala His Tyr C		
ttg oot got gtt Leu Pro Ala Val				

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						agt Ser										62 4
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						cca Pro										720
						gea Ala										768
						aaa Lys										816
						ttt Phe										€ 6}
						ato Ile 295										912
						tgg Trp										<u>ଜନ୍ମ</u>
	-	ago	+ at													
	ser	Ser				atc Ile			-		-				-	1008
	gat	cga	Cys caa	Asp 325 tgg	Pro		Ser acc	Phe tgt	Ala 330 ttc	Arg	Asp gtc	Th.r gga	Ser gac	Ile 335 ccg	Asp gga	1008 1056
Val egg	gat Asp	oga Arg tgg	caa Gln 340	Asp 325 tgg Trp caa	Pro toc Ser cag	Ile att	Ser acc Thr	tgt Cys 345	Ala 330 ttd Phe	Ang atg Met	Asp gto Val	Th.r gga Gly aag	gac Asp 350	Ile 335 ccg Pro	Asp gga Gly	
Val ogg Arg	gat Asp aag Lys	oga Arg tgg Trp 355	caa Gln 340 tcc Ser	Asp 325 tgg Trp caa Gln	Pro too Ser cag Glr.	Ile att Ile too	acc Thr aag Lys 360	Phe tgt Cys 345 cag Glr	Ala 330 ttc Phe gta Val	Ang atg Met Oga Ang	Asp gto Val caa Gln	Thr gga Gly aag Lys 365	gac Asp 350 tot Ser	Ile 335 cog Pro- gtc Val	Asp gga Gly tgg Trp	1056

617 gga	a gct / Ala	i dog Pro	agc Ser	gcc Ala 405	Val	tat Tyr	ggy Gly	ctg Leu	aac Asn 410	Asp	ctc Leu	ato Ile	aca Thr	ctg Leu 415	ggt Gly	1248
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acq Thr	r tot Ser	tta Leu 435	Val	tgg Trp	aaa Lys	Gly	tat Tyr 440	Met	gaa Glu	993 Gly	gcc Ala	ata Ile 445	cga Arg	teg Ser	ggt Gly	1344
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	1 · 2 ·	11 463 PET Exop	hial	a sp.	inif	era										
+1212 +1212 +1212 +1212	1 · 2 ·	misc (1). Extr	.(3)		in 1	K:tr/	APAO									
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Lys 1	Asp	Asn	Val	Ala 5	Asp	Val	Val	Val	Val 10	Glγ	Ala	Gly	Leu	Ser 15	Gly	
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	Sor	Asn	Gln	Ser	Glu	Val	Ser	Arg	Leu	Phe 75	Glu	Arg	Phe	His		
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65					70	Thr	Thr	Gly	Asn 90		Ile	His	Gln	Ala 95		

Glu	ı Val	Ala 115	ser	: Ala	Leu	Ala	Glu 120	Leu	ı Lev	ı Pro	> Val	. Trp 125		Gln	ı Leu
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Arg 145	Leu	Asp	Ser	· Val	Ser 150	Phe	Ala	His	Tyr	Cys 155		Lys	Glu	Leu	Asn 160
Leu	Pro	Ala	Val	Leu 165	Gly	Val	Ala	Asn	Gln 170		Thr	Ang	Ala	Leu 175	Leu
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Gly	Gln 210	Tyr	Met	Arg	Cys	Lys 215	Thr	Gly	Met	Gln	Ser 220	Ile	Cys	His	Ala
Met 225	Ser	Lys	Glu	Leu	Val 230	Pro	Gly	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Ala	Ser	Gly	Cys 250	Thr	Val	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Val	Ser	Leu	Pro 270	Thr	Thr
Leu	Tyr	Pro 275	Thr	Leu	Thr	Phe	Ser 280	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln
Ala	Leu 290	Ala	Glu	Asn	Ser	Ile 295	Leu	Gly	Tyn	Tyr	Ser 300	Lys	Ile	Val	Phe
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Gln	Ser	Ser	Cys	Asp 325	Pro	Ile	Ser	Phe	Ala 330	Arg	Asp	Thr	Ser	Ile 335	Asp
Val	Asp	Arg	Gln	Trp	Ser	Ile	Thr	Cys	Phe	Met	Val	Gly	Asp	Pro	Gly

340 345 350

Arg Lys Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp 355 360 Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly Ala Gln Val Pro Glu 370 375 Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys Gln Gln Tyr Phe Gln 390 3.45 Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly 405 410 Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 420 425 Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 440 Gir. Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 455 · 210 · 12 <211 · 34 <212 - DNA <213. Artificial Sequence <220> <223> Primer for cloning into vectors N23256 (Exophiala spinifera) 74002 12 agggaattca aagacaacgt tgcggacgtg gtag 34 <210> 13 -:211. 34 <212> DNA <213> Artificial Sequence <020 × Primer for cloning into vectors N23056 (Exophiala spinifera) #4000 13

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34

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-:::3g -	[⊮si	gned	olid	go f	or 3	' RA(	CE, 1	N219(	55 (1	fqexE	niala	a sp.	inif	era)	
mana. Marte		acog	acaad	es t	igtai	teda									29
0217 + +0211 + +0217 +0217 + +	2∃ DNA	fici	al Se	eguer	nce										
41. 11 + 41.11 +		gned	oli	go f∢	or 5	' F.A.	CE, 1	N2190	69 (I	Exopl	niala	a spi	inif∈	era)	
ाई ग्लेड पञ्चर † g		caigai	caga	et t	itgto	egt									28
F1. 100 F1. 110 F1. 120 F1. 12	1673 ENA	hiala	a spi	inif∈	era										
+10.100+ +10.110+ +10.121+ +10.131+	s::g_; (1). yeas:	pept: .(26 t alj	ide 7) pha r	natir	ng fa	actoi	r se	creti	ion s	signa	al				
HOUGH KODIN HODDIN HODDIN		.(16	62)												
<4000 atg ag Met Ar 1	a ttt														48
gda tt Ala Le															96
att co Ile Pr															1.4.4
gat dt Asp Va 50	l Ala														192
ttt at Phe Il															240

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		ago qgt thy gad acg Ser Gly Leu Glu Phr 110	
		oto gtt out gag gog Leu Val Leu Glu Ala 121	
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		ato aat gab ago aad Ile Asn Asp Ser Asn 155	
		bat tty gay ygo gag His Lei Glu Gly Glu 170	
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		cag ctg atc gaa gag Gln Leu IIe Glu Glu 220	
		gog aag ogg oto gad Ala Lys Arg Leu Asp 235	
		ota aac tig oot get Leu Ash Leu Pro Ala 250	
		otg oto ggt gtg gaa Leu Leu Gly Val Glu 270	
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ccg Pro	ttc Phe	aag Lys 515	agt Ser	gtt Val	cat His	ttc Phe	gtt Val 520	gga Gly	acg Thr	gag Glu	acg Thr	tot Ser 525	tta Leu	gtt Val	tgg Trp	1584

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Giu Mal Val Ala Ser Leu Val Pro Ala Ala 545 550	1075
+U11: 554 +U12: PRT +U13: Exophiala spinifera +(400: 17	
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Ile Fro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe 35 40 45  Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu	
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Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp 115 120 125	
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- Ser Lys Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu 355 360 365
- Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn 370 375 380
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		oga aac aaa aag ttt Arg Asn Lys Lys Phe 45	
		tat att gat ggt gat Tyr Ile Asp Gly Asp 60	
_		tat ata get gae aag Tyr Ile Ala Asp Lys 75	
	s Pro Lys Glu Arg	gca gag att tca atg Ala Glu Ile Ser Met 90	
		gtt tog aga att gca Val Ser Arg Ile Ala 110	
		ttt ott ago aag ota Phe Leu Ser Lys Leu 125	
		tyt cat aaa aca tat Cys His Lys Thr Tyr 140	
		e atg ttg tat gac gct e Met Leu Tyr Asp Ala 155	

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gtt Val	tgt Cys	ttt Pre	aaa Lys 130	$L_{J}$ 3	egt Ang	att Ile	gaa Glu	get Ala 135	ats Ile	ada Pro	caa Gln	att Ile	gat Asp 190	a…g L;;s	tac Tyr	576
ttg Leu	aaa Lys	tee Ser 195	ago Ser	aa g Lys	tut Tyr	ata Ile	goa Ala 200	tgg Trp	aat Erb	titg Leu	cag Gln	ggd Gly 205	tg; Trp	caa GIn	goo Ala	624
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gct Ala	gga	ttg Leu	agc Ser	g#* GLy 245	ttg L∈u	gag Glu	ac p Thr	gca Ala	cg: Arq 250	aaa Lys	gtc Val	cag Gln	god Ala	gcc Ala 255	ggt Gly	7 ິ ກ ່
ctg Leu	toc Ser	tgc Cys	oto Leu 260	gtt Val	ott Leu	gag Glu	gcq Ala	atig Met 265	gat Asp	cat Arg	gta Val	499 Gly	gga Gly 270	aag Lys	act Thr	816
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		gac Asp														12	) ı j
		aaa Lys 435														133	: -1
		tga Cys														134	<b>)</b> []
		acc Thr														144	r ()
		tog Ser														148	· Ā.
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gtg do Val Pr 69	o Ala	-	tag												2079
-1210	19														
+1211 + +1212 + +1213 +	PET	awc													
+1020 × +1023 ×	GST:	K:trA	APAO	2079	9 for	r bac	cteri	ial ∈	expre	essio	on (B	Exoph	nialā	a spin:	ifera)
H220 + H2014 H2224 H2234	misc (1). gst	(687	7 )	poly	/link	ker									
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28

Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu

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Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys 50 60

Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn 65 70 75 80

Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu 35 90 95

Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser 100 105 110

Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu 115 120 125

Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn 130 135 140

Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp 145 150 155 160

Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu 165 170 175

Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr 180 185 190

Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala 195 200 205

Thr Phe Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg 210 215 220

Gly Ser Pro Glu Phe Lys Asp Asn Val Ala Asp Val Val Val Val Gly 225 230 235 240

Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly 245 250 255

Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr 260 265 270

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680

Val Pro Ala Ala 590

675

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<213> Unknown

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3000 B
...1    misc_feature
\cdot \dots \cdot (73) \dots (1464)
-11 - F:trapao cDNA
3 1 <u>1</u> 1 1 3
-121 · CDS
 227
       (1)...(1461)
- 25
+ 2200×
· 1010 misc feature
1221 (73)..(75)
-11230 Added lysine residue
+ 4000 20
atg ged aac aag cad etg ago etc ted etc tte etc gtg etc etc gge
                                                                          48
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                                      10
eto tee ged tee ete ged age ggd aaa gad aad gtt geg gad gtg gta
                                                                          96
Lou Ser Ala Ser Leu Ala Ser Gly Lys Asp Asn Val Ala Asp Val Val
             20
                                  25
gtg gtg ggc get ggc ttg age ggt ttg gag acg gca ege aaa gte eag
                                                                         144
Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln
        35
                             40
goe goe ggt etg toe tge ete gtt ett gag gog atg gat egt gta ggg
                                                                         192
Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly
aga aag act etg age gta caa teg ggt eee gge agg aeg aet ate aac
                                                                         240
Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile Asn
                     7.0
gae etc gge get geg tgg atc aat gae age aac caa age gaa gta tec
                                                                         288
Asp Leu Gly Ala Ala Trp Ile Asn Asp Ser Asn Gln Ser Glu Val Ser
                 8.5
                                                           95
aga ttg ttt gaa aga ttt cat ttg gag ggc gag ctc cag agg acg act
                                                                         336
Ang Leu Phe Glu Arg Phe His Leu Glu Gly Glu Leu Gln Arg Thr Thr
            100
                                  105
                                                       110
gga aat toa ato cat caa gca caa gac ggt aca acc act aca gct cct
                                                                         384
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Gly	Asn	Ser 115	Ile	His	Gln	Ala	Gln 120	Asp	Gly	Thr	Thr	Thr 125	Thr	Ala	Pro	
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ctc Leu 145	oto Leu	odo Pro	gta Val	tag Trp	tat Ser 150	cag Gln	otg Leu	ato Ile	gaa Glu	gag GLu 155	cat His	agc Ser	ctt Leu	caa Gln	gac Asp 160	430
ctc Leu	aag Lys	gog Ala	ago Ser	ost Pro 165	cag Gln	gog Ala	аад Буз	egj Arj	oto Leu 170	jac Asp	ajt Ser	gtg Val	agc Ser	ttc Phe 175	gog Ala	5.24
cac His	tac Tyr	tạt Cys	gag Glu 130	aag Lys	gaa Glu	ota Leu	aac Asn	ttg Leu 135	pot Pro	jct Ala	gtt Val	oto Leu	ggc Gly 19)	gta Val	gca Ala	5 7.
aac Asn	caq Gln	atc Ile 195	aca Thr	ogo Arg	get Ala	ctg Leu	oto Leu 200	gly	yty Val	jaa 31u	gco Ala	cac His 205	gag Glu	atc Ile	agc Ser	6.24
atg Met	ott Leu 210	ttt Phe	otc Leu	acc Thr	gac Asp	tac Tyr 215	at: Ile	aag Lys	agt Ser	jcc Ala	acc Thr 220	ggt Gly	ctc Leu	agt Ser	aat Asn	67.:
att Ile 225	ttc Phe	ticg Ser	gac Asp	aag Lys	aaa Lys 230	gac Asp	Gly Jgc	GIA aad	cag Gln	tat Tyr 235	atg Met	oga Arg	tgc Cys	aaa Lys	aca Thr 240	720
ggt Gly	atg Met	cag Gln	tog Ser	att Ile 245	tg: Cys	cat His	god Ala	atg Met	tca Ser 250	aag Lys	gaa Glu	ctt Leu	gtt Val	cca Pro 255	gly ggc	768
tca Ser	gtg Val	cac His	ctc Leu 260	aac Asn	acc Thr	occ Pro	gtc Val	got Ala 265	gaa Glu	att Ile	gag Glu	cag Gln	tcg Ser 270	gca Ala	tcc Ser	816
ggc Gly	tigt Cys	aca Thr 275	gta Val	cga Arg	tog Ser	gcc Ala	tog Ser 280	ggc Gly	gcc Ala	gtg Val	ttc Phe	oga Arg 285	agc Ser	aaa Lys	aag Lys	864
											acc Thr 300					912
cca Pro 305	aat Pro	ctt Leu	ccc Pro	gec Ala	gag Glu 310	aag Lys	caa Gln	gca Ala	ttg Leu	gcg Ala 315	gaa Glu	aat Asn	tct Ser	atc Ile	ctg Leu 320	960
ggc Gly	tac Tyr	tat Tyr	agc Ser	aag Lys 325	ata Ile	gtc Val	ttc Phe	gta Val	tgg Trp 330	gac Asp	aag Lys	dag Pro	tgg Trp	tgg Trp 335	cgc Arg	1008
gaa Glu	caa Gln	ggc Gly	ttc Phe	tcg Ser	ggc Gly	gtc Val	ctc Leu	caa Gln	tog Ser	agc Ser	tạt Cys	gac Asp	ccc Pro	atc Ile	tca Ser	1056

340		345	350							
ttt god aga gat Phe Ala Arg Asp 355	ace age ate gae Thr Ser Ile Asp 360	gto gat oga caa tgg Val Asp Arg Gln Trp 365	Ser Ile Thr							
tgt tto atg gto Cys Phe Met Val 370	gga gac ccg gga 3ly Asp Pro Gly 375	ogg aag tyg too daa Arg Lys Trp Ser Glo 330	cag too aag 115.2 Gln Ser Lys							
		gad daa oto ogo goa Asp 31n Leu Arg Ala 395								
aac goo ggg goo Asn Ala Gly Ala	caa gto coa gag Gln Val Pro Glu 405	bog god aab gtg otb Pro Ala Asn Val Leu 410	gaa ato gag 1248 Ghu Ile Glu 415							
		jga got bog ago god Gly Ala Pro Ser Ala 425								
otg aac gat otc Leu Asn Asp Leu 435	ato aca otg jgt Ile Thr Leu Gly 440	tog gog oto aga acg Ser Ala Leu Arg Thr 445	bog tto aag 1344 Pro Phe Lys							
		acg tot tha git tgg Thr Ser Leu Val Trp 460								
atg gaa ggg gee Met Glu Gly Ala 465	ata oga tog ggt Ile Arg Ser Gly 470	caa cga ggt gct gca Gln Arg Gly Ala Ala 475	gaa gtt gtg — 1440 Glu Val Val 480							
get age etg gtg Ala Ser Leu Val	cca gca gca tag Pro Ala Ala 485		1464							
<pre>&lt;210&gt; 21 &lt;1211&gt; 487 &lt;212&gt; PRT &lt;213&gt; Unknown</pre>										
+:220> +:2235 K:trAPA0	fusion with barl	ley alpha amylase (E	xophiala spinifera)							
#220s #221> misc_feature #223> K:trAPAO cDNA										
<pre>*:220s *:221&gt; misc_feature *:222&gt; (73)(75) *:223&gt; Added lysine residue</pre>										

<: 4	00>	2

- Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Gly
- Leu Ser Ala Ser Leu Ala Ser Gly Lys Asp Asn Val Ala Asp Val Val 20 25 30
- Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln 35 40 45
- Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly 50 55 60
- Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile Asn 65 70 75 80
- Asp Leu Gly Ala Ala Trp Ile Asn Asp Ser Asn Gln Ser Glu Val Ser 85 90 95
- Arg Leu Phe Glu Arg Phe His Leu Glu Gly Glu Leu Gln Arg Thr Thr 100 105 110
- Gly Asn Ser Ile His Gln Ala Gln Asp Gly Thr Thr Thr Thr Ala Pro
- Tyr Gly Asp Ser Leu Leu Ser Glu Glu Val Ala Ser Ala Leu Ala Glu 130 135 140
- Leu Lys Ala Ser Pro Gln Ala Lys Arg Leu Asp Ser Val Ser Phe Ala 165 170 175
- His Tyr Cys Glu Lys Glu Leu Asn Leu Pro Ala Val Leu Gly Val Ala 180 185 190
- Asn Gln Ile Thr Arg Ala Leu Leu Gly Val Glu Ala His Glu Ile Ser  $195 \hspace{1cm} 200 \hspace{1cm} 205$
- Met Leu Fhe Leu Thr Asp Tyr Ile Lys Ser Ala Thr Gly Leu Ser Asn 210 215 220

Ile 225	Phe	Ser	Asp	Lys	Lys 230	Asp	Gly	3ly	Gln G	Tyr 235		Arg	-Cys	Lys	Thr 240
Gly	Met	Gln	Ser	Ile 245	Cys	His	Ala	Met	Ser 250		Glu	Leu	. Val	Pro 255	
Sen	Val	His	Leu 260	Asn	Thr	Pro	Val.	Ala 265	Glu	Ile	Glu	Gln	Ser 270	Ala	Ser
Gly	Cys	Thr 275	Val	Arg	Ser	Ala	Ser 280	Gly	Ala	Val	Phe	Arg 285		Lys	Lys
Val.	Val 290	Val	Ser	Leu	Pro	Thr 295	Thr	Leu	Tyr	Pro	Thr 300	Leu	Thr	Ph.e	Ser
Pro 305	Fro	Leu	Pro	Ala	Glu 310	Lys	Gln	Ala	Leu	Ala 315	Glu	Asn	Ser	Ile	Leu 320
Gly	Tyr	Tyr	Ser	Lys 325	Ile	Vai	Phe	Val	Trp 330	Asp	Lys	Pro	Trp	Trp 335	Arg
Glu	Gln	Gly	Phe 340	Ser	Gly	Val	Leu	Gln 345	Ser	Ser	Cys	Asp	Pro 350	Ile	Ser
Phe	Ala	Arg 355	Asp	Thr	Ser	Ile	Asp 360	Val.	Asp	Arg	Gln	Trp 365	Ser	Ile	Thr
Cys	Phe 370	Met	Val	Gly	Asp	Pro 375	Gly	Arg	Lys	Trp	Ser 380	Gln	Gln	Ser	Lys
Gln 385	Val	Arg	Gln	Lys	Ser 390	Val	Trp	Asp	Gln	Leu 395	Arg	Ala	Ala	Tyr	Glu 400
Asn	Ala	Gly	Ala	Gln 405	Val	Pro	Glu	Pro	Ala 410	Asn	Val	Leu	Glu	Ile 415	Glu
Trp	Ser	Lys	Gln 420	Gln	Tyr	Phe	Gln	Gly 425	Ala	Pro	Ser	Ala	Val 430	Tyr	Gly
Leu	Asn	Asp 435	Leu	Ile	Thr	Leu	Gly 440	Ser	Ala	Leu	Arg	Thr 445	Pro	Phe	Lys

Ser Val His Phe 450	Val Gly Thi	Glu Thr Sei	Leu Val Trp Ly 460	s Gly Tyr
Met Glu Gly Ala 465	Ile Arg Ser 470	Gly Gln Arg	g Gly Ala Ala Gl 475	u Val Val 480
Ala Ser Leu Val	Pro Ala Ala 485	1		
H210 + 22 H211 + 1803 H212 + DMA H213 + Exophiala	spinifera			
+0.000 +0.001 + 0.008 +0.0020 + (1)(180 +0.0030	0)			
<pre>+4000 25 atg gca ctt gca Mct Ala Leu Ala 1</pre>	oog ago tao Pro Ser Tyr 5	atc aat coc Ile Asn Pro 10	cca aac gtc gc Pro Asn Val Al	c tcc cca 43 a Ser Pro 15
gea ggg tat tot Ala Gly Tyr Ser 20	cac gtc ggc His Val Gly	gta ggc cca Val Gly Pro 25	gac gga ggg ag Asp Gly Gly Ar 30	g tat gtg 96 g Tyr Val
aca ata gct gga Thr Ile Ala Gly ( 35	cag att gga Gln Ile Gly	caa gac gct Gln Asp Ala 40	tcg ggc gtg ac Ser Gly Val Th 45	a gac cct 144 r Asp Pro
gcc tac gag aaa Ala Tyr Glu Lys ( 50	cag gtt gcc Gln Val Ala 55	caa gca tto Gln Ala Phe	gcc aat ctg cg Ala Asn Leu Ar 60	a got tgo 192 g Ala Cys
ctt gct gca gtt ( Leu Ala Ala Val ( 65	gga gcc act Gly Ala Thr 70	tca aac gac Ser Asn Asp	gtc acc aag ct Val Thr Lys Le 75	c aat tac 240 u Asn Tyr 80
tac atc gtc gac t Tyr Ile Val Asp 1	tac gec eeg Fyr Ala Pro 85	agc aaa ctc Ser Lys Leu 90	acc gca att gg Thr Ala Ile Gl	a gat ggg 288 y Asp Gly 95
ctg aag gct acc t Leu Lys Ala Thr F 100	ttt gcc ctt Phe Ala Leu	gac agg ctc Asp Arg Leu 105	cct cct tgc ac Pro Pro Cys Th 11	r Leu Val
cca gtg teg gee t Pro Val Ser Ala I 115	ttg tot toa Leu Ser Ser	cct gaa tac Pro Glu Tyr 120	cte ttt gag gt Leu Phe Glu Va. 125	t gat gcc 384 l Asp Ala
acy gcg ctg gtg c Thr Ala Leu Val E	ccg gga cac Pro Gly His	acg acc cca Thr Thr Fro	gac aac gtt gco Asp Asn Val Ala	g gac gtg 432 a Asp Val

	130	)				125					140	)				
gta Val 145	. va.	g gtg Val	g gga Gly	: get : Ala	gg = Gly 150	Leu	agc Ser	ggt Gly	ttg Leu	gag 31u 155	Thr	g gca Ala	cgc Arg	aaa Lys	gts Val 160	4 3:)
cag Glm	ged Ala	gec Ala	: ggt : Gly	ctg Leu 165	ser	tgc Cys	ct c Leu	gtt Val	ot t Leu 170	-31·1	geş Als	j atg Met	gat Asp	cgt Arg 175	gta Val	5:13
Gly ggg	gga Jly	aag Lys	act Thr 180	Leu	agc Ser	gta Val	caa Gln	tcg Ser 185	Gly	cos Pro	gg: Gly	: agg ' Arg	acg Thr 190	Thr	atc Ile	57 ŋ
aac Asn	gac Asp	ct.c Leu 195	GLY	gct Ala	gcg Ala	tgg Trp	atc 11e 200	aat Asn	jac Asp	ags Ser	ваю Asn	taa Gln 205	agc Ser	gaa Glu	gta Val	62.4
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act Thr 225	gga Gly	aat Asn	tica Ser	atc Ile	cat His 230	caa Gln	gca Ala	caa Gln	gac Asp	335 317 33†	aca Thr	acc Thr	act Thr	aca Thr	got Ala 240	720
cct Pro	tat Tyr	ggt Gly	gac Asp	tcc Ser 245	ttg Leu	ct j Leu	agc Ser	·jag Glu	gag Glu 250	gtt Val	gca Ala	agt Ser	gca Ala	ott Leu 255	gcg Ala	768
gaa Glu	otc Leu	ctc Leu	oca Pro 260	gta Val	tgg Trp	tat Ser	cag Gln	ctg Leu 265	at: Ile	gaa Glu	gag Glu	cat His	agc Ser 270	ctt Leu	caa Gln	816
gac Asp	ctc Leu	aag Lys 275	gcg Ala	agc Ser	cct Fro	cag Gln	gcg Ala 280	aag Lys	egg Arg	ctc Leu	gac Asp	agt Ser 285	gtg Val	agc Ser	ttc Phe	86∉
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aat Asn	att Ile	ttc Phe	tog Ser 340	gac Asp	aag Lys	aaa Lys	gac Asp	ggc Gly 345	ggg Gly	cag Gln	tat Tyr	atg Met	cga Arg 350	tgc Cys	aaa Lys	1056
aca Thr	ggt Gly	atg Met 355	cag Gln	teg Ser	att Ile	Суѕ	cat His 360	gcc Ala	atg Met	tca Ser	aag Lys	gaa Glu 365	ctt Leu	gtt Val	cca Pro	1104

GT.	c toa y Sei 370	. va.	g cac l His	cto Lei	c aac ı Asr	acc Thr 375	Pro	c gto : Val	e get L Ala	t gaa a Gl:	a ati 110 380	e Gla	g ca; ı Gl:	g to n Se:	g gca r Ala	1152
too Sei 385	- GT2	tgt 7 Cys	aca Thr	gta Val	a oga Arg 390	Ser	Ala Ala	tog Ser	: GT7	goo 7 Ala 395	a Val	g tto Phe	c cga e Arq	a ago g Ser	c aaa C Lys 4(0	1200
aaç Lys	g gt: s Val	rgto Val	g gtt Val	tog Ser 405	`Leu	. dag . Pro	aca Thr	acc Thr	ttig Leu 410	ı Tyr	ca: Pro	acc Thr	ttg Leu	g aca Thi 415	ttt Phe	1.248
tida Ser	coa Pro	aat Pro	ctt Leu 420	odd Pro	gcc Ala	gag Glu	aag Lys	Gaa Gln 425	Ala	. ttg . Leu	goç Ala	r gaa Glu	aat Asn 430	i Ser	atc lle	12 +6
r.e.c	i tally	13r 435	Tyr	Ser	Lys	I±e	Val. 440	Phe	Val	Trp	Asp	Lys 445	Pro	Trp	tgg Trp	1344
Ary	450	OTU	ggc Gly	Phe	Ser	G1 <i>y</i> 455	Vā1	Leu	Gln	Ser	3er 460	Cys	Asp	Pro	Ile	1392
465	rne	Ата	aga Arg	Asp	Thr 470	Ser	Ile	Asp	Val	Asp 475	Arg	Gln	Trp	Ser	Ile 480	1440
1111	Cys	rne	atg Met	Val 485	Gly	Asp	Pro	Gly	Arg 490	Lys	Trp	Ser	Gln	Gln 495	Ser	1489
пЛр	GIII	vai	cga Arg 500	GIN	ГÀЗ	Ser	V.al	Trp 505	Asp	Gln	Leu	Arg	Ala 510	Ala	Tyr	1536
GIU	ASN	515	ggg Gly	Ala	GIn	Val	Pro 520	Glu	Pro	Ala	Asn	Val 525	Leu	Glu	Ile	1534
Giu	530	ser	aag Lys	GIN	Gin	Tyr 535	Phe	Gln	Gly	Ala	Pro 540	Ser	Ala	Val	Tyr	1632
545	Leu	Asn	gat Asp	Leu	11e 550	Thr	Leu	Gly	Ser	Ala 555	Leu	Arg	Thr	Pro	Phe 560	1630
пур	ser	Val		565	Val	GLY	Thr	Glu	Thr 570	Ser	Leu	Val	Trp	Lys 575	Gly	1728
tat Tyr	atg Met	GIU	ggg Gly . 580	gcc Ala	ata Ile	cga Arg	Ser	ggt Gly 585	caa Gln	cga Arg	ggt Gly	gct Ala	gca Ala 590	gaa Glu	gtt Val	177€

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4213: Exophiala spinifera

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Ala Tyr Glu Lys Gln Val Ala Gln Ala Phe Ala Asn Leu Arg Ala Cys 50 55 60

Leu Ala Ala Val Gly Ala Thr Ser Asn Asp Val Thr Lys Leu Asn Tyr 65 70 75 30

Tyr Ile Val Asp Tyr Ala Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly 85 90 95

Leu Lys Ala Thr Phe Ala Leu Asp Arg Leu Pro Pro Cys Thr Leu Val 100 105 110

Pro Val Ser Ala Leu Ser Ser Pro Glu Tyr Leu Phe Glu Val Asp Ala 115 120 125

Thr Ala Leu Val Pro Gly His Thr Thr Pro Asp Asm Val Ala Asp Val 130 135 140

Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val 145 150 155 160

Gln Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val 165 170 175

Gly Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile

Asn	Asp	Leu 195	Gly	Ala	Ala	Trp	Ile 200	Asn	Asp	Ser	Asn	Gln 205	Ser	3lu	Val
Ser	Arg 210	Leu	2he	Glu	Arg	Phe 215	His	Leu	Glu	Gly	Glu 221	Leu	Glm	Arg	Thr
Thr 225	Gly	Asrı	Ser	Ile	His 230	Glr.	Ala	Gln	Asp	Gly 235	Thir	Thr	Thr	Thr	Ala 240
Pro	Tyr	Gly	ąε.A.	Ser 245	Leu	Leu	Ser	Glu	Glu 250	Val	Ala	Ser	Ala	Leu 255	Ala
Glu	leu.	Leu	250 260	Val	Trp	3er	Glr.	Leu 265	He	Glu.	Glu	His	Ser 270	∆÷น	Glr.
Asp	Leu	Lys 275	Ala	Ser	Pro	Gln	Ala 280	⊥ys	Arg	Leu	Asp	3er 285	Val	Ser	Ph⊕
Ala	His 290	Tyr	Cys	Glu	Lys	Glu 295	Leu	Asr.	Leu	Pro	Ala 3(0)	Val	Leu	Gly	Val
Ala 305	Asr.	Gln	Ile:	Thr	Arg 310	Ala	Leu	Leu	G17	Val 315	Glu	Ala	His	Glu	11e 320
Ser	Met	Leu	Phe	Leu 325	Thr	Asp	Tyr	Ile	Lys 330	Ser	Ala	Thr	Gly	Leu 335	Ser
Asr.	Ile	Phe	Ser 340	Asp	Lys	Lys	Asp	Gly 345	Gly	Gln	Tyr	Met	Arg 350	Cys	Lys
T'hr	Gly	Met 355	Gln	Ser	Ile	Сув	His 360	Ala	Met	Ser	Гλε	G.Lu 365	Leu	Val	Pro
Gly	Ser 370	Val	His	Leu	Asrı	Thr 375	Pro	Val	Ala	Glu	Ile 380	Glu	Gln	Ser	Alā
Ser 385	Gly	Cys	Thr	Vāl	Arg 390	Ser	Ala	Ser	erA	Ala 395	Val	Phe	Arg	Ser	Δγs 4(0)
Lys	Val	Val	Val	Ser 405	Leu	Pro	Thr	Thr	Leu 410	Tyr	Pro	Thr	Leu	Thr 415	Phe

180 185 190

Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile 420 425 Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp 435 440 Arg Gli Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 455 460 Ger Phe Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile 465 470 475 Thir Cys Phe Met Val Gly Asp Fro Gly Arg Lys Trp Ser Gln Gln Ser 485 490 Lys Glr. Val Arg Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 500 505 Glu Asr. Ala Gly Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile 520 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 53C 535 540 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 545 550 555 Lys Ser Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 565 570 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 590 Val Ala Ser Leu Val Pro Ala Ala 595 600 <210 > 24 <211> 3003 <012 FINA <213> unknown <12201-

<223: K:trAPAO (Exophiala spinifera)

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 · 225 - espl mat
 (2) (1) -
 ...l misc feature
 1576)..(1611)
        spacer sequence
 8 2 2 4 8 8
 4 L2003
 8 21. <u>2</u>1. s
       (1612)..(3000)
 K:trAPAO
× 2700 ×
+211+ CDS
(1)..(3000)
+ L23 +
3.020 A
- 021D
       misc feature
\cdot 1112 \cdot (161\overline{2}) .. (1614)
· 22: extra lysine
< 400> 24
atg yee aac aag cac etg age etc tee etc tte etc gtg etc etc gge
                                                                        43
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                                     10
cts tee ges tee etc ges age ggs get eet act gts aag att gat get
                                                                        96
Leu Ser Ala Ser Leu Ala Ser Gly Ala Pro Thr Val Lys Ile Asp Ala
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ggg atg gtc ggc acg act act gtc ccc ggc acc act gcg acc
                                                                      14.1
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                             40
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                                                                      192
Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala Ser Pro Thr Arg Phe
    50
                        55
gog cot cot act ogt occ gtg oct tgg toa acg oct ttg caa god act
                                                                      240
Ala Fro Pro Thr Arg Pro Val Pro Trp Ser Thr Pro Leu Gln Ala Thr
                    70
goa tat ggt coa goa tgc cot caa caa tto aat tac coc gaa gaa cto
                                                                      288
Ala Tyr Gly Pro Ala Cys Pro Gln Gln Phe Asn Tyr Pro Glu Glu Leu
                85
cat gag att acg atg ged tgg ttd aat aca eeg eec eeg tea get ggt
                                                                      336
Arg Glu Ile Thr Met Ala Trp Phe Asn Thr Pro Pro Pro Ser Ala Gly
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ga. Gl:	a ag u Se:	t ga: r Gl: 115	1 WO	c tg p Cy:	c ct: s Le:	g aad 1 Asi	c cto n Lei 120	ı As:	c at n Il.	c tad	e gt r Va	e eda 1 Pro 125	G1;	a ac y Th	t gag r Glu	334
aac Asi	c aca n Thi 130	- 713-1	c aaa : Lys	a gco s Alá	e gto a Val	d ato L Met 135	· Val	t tg: L Tr;	g at. O Il:	a tak e Tyr	= gg = Gl; 140	y Gly	gco Ala	g cto a Leo	g gaa 1 311	4 32
tat Ty: 145	- 017	tg: Trp	g aat Asr	toa N Ser	tto Phe 150	His	ctt Leu	tad Tyr	gac Asp	19-5 o GT <i>Z</i> o gać	, Ala	i agt i Ser	tto Phe	c gca e Ala	a god a Ala 160	430
aat Asr	caş Glr	gat Asp	gto Val	ato Ile 165	: Ala	gtg Val	racc Thr	e ato	aac Asr 17(	ı Tyr	aga Arç	a acg J Thr	aac Asr	: att : Ile 175	ct; Lea	51.8
<u>т</u> у	1116	E 1. (,	180	A.I.d	PIO	Ω.Lei	Leu	Pro 185	Ile	Thr	Gln	ı Arg	Asn 190	Let	1 317 1 333	576
tta Phe	cta Leu	gac Asp 195	-J-11	agg Arg	ttt Phe	gst Ala	ttg Leu 200	gat Asp	tgg T'rp	gta Val	Jag Gln	cgg Arg 205	aac Asn	atc Ile	gca Ala	624
gcc Ala	ttt Phe 210	ggc Gly	ggt Gly	gat Asp	cct Pro	cga Arg 215	aag Lys	gtc Val	aca Thr	ata Ile	ttt Phe 220	G]À ààà	cag Gln	agt Ser	geg Ala	672
999 Gly 225	ggc Gly	aga Arg	agt Ser	gtc Val	gac Asp 230	gtc Val	ctc Leu	ttg Leu	acg Thr	tct Ser 235	atg Met	cca Pro	cac His	aac Asn	eca Pro 240	720
ccc Pro	ttc Phe	cga Arg	gca Ala	gca Ala 245	atc Ile	atg Met	gag Glu	tcc Ser	ggt Gly 250	gtg Val	gct Ala	aac Asn	tac Tyr	aac Asn 255	ttc Fhe	768
ccc Pro	aag Lys	gga Gly	gat Asp 260	ttg Leu	tcc Ser	gaa Glu	cct Pro	tgg Trp 265	aac Asn	acc Thr	act Thr	gtt Val	caa Gln 270	gct Ala	ctc Leu	5ء 81
aac Asn	tgt Cys	acc Thr 275	acc Thr	agt Ser	atc Ile	gac Asp	atc Ile 280	ttg Leu	agt Ser	tgt Cys	atg Met	aga Arg 285	aga Arg	gtc Val	gat Asp	864
ctc Leu	gcc Ala 290	act Thr	ctg Leu	atg Met	aac Asn	acg Thr 295	atc Ile	gag Glu	caa Gln	ctc Leu	gga Gly 300	ctt Leu	gly aaa	ttt Phe	gag Glu	912
tac Tyr 305	acg Thr	ttg Leu	gac Asp	aac Asn	gta Val 310	acg Thr	gct Ala	gtg Val	tac Tyr	cgt Arg 315	tct Ser	gaa Glu	acg Thr	gct Ala	ogc Arg 320	960
acg Thr	act Thr	ggt Gly	ASP	att Ile 325	gct Ala	cgt Arg	gta Val	Pro	gtt Val 330	ctc Leu	gtc Val	gly aaa	Thr	gtg Val 335	gcc Ala	1008

	gga ott 31y Lei 34°	ı Leı Pr								1056
	gag go Glu Al 355		_	_						110;
	. tat ⊝o . Tyr Pr									11.5
	ged at: Ala Il-		r Glu							1201
	dag ga Glm Asj									124:
	gog ac- Ala Th: 420	: Phe 31								123%
	: ago to: : Sem Sem 435									1344
	Thr Ala									1393
	god tti Ala Phe		s Asn							1440
	raat gte Asr Val									1488
-	tot do: Ser Pro 500	Ala Tr		-	-	_	_	-	-	 1536
	act ga Thr Glu 515									1584
	: gga gg : Gly Gly									1632
	r gtg gg:   Val Gl:		y Leu							1680

cag Gln	gcc Ala	goc Ala	ggt Gly	ctg Leu 565	toc Ser	tgc Cys	ctc Leu	gtt Val	ctt Leu 570	gag Glu	gog Ala	atg Met	gat Asp	agt Arg 575	gta Val	1728
						gta Vai										1776
						tgg Trp										1324
						tit Phe 615										1272
						caa Glr.										1+20
						otg Leu										19963
						tot Ser										2016
-		-		-		cag Gln		-			-	-		-		.1064
						gaa Glu 695										.:112
						got Ala										2160
	-					gac Asp				-	-				-	2208
						aaa Lys										2156
						tgo Cys										2304
						acc Thr 775										2352
tac	ggc	tgt	aca	gta	oga	tcg	god	tog	ggo	3cc	gtg	tta	cga	age	aaa	2400

Ser 785	Gly	Cys	Thr	Val	Arg 730	Ser	Ala	Ser	З1γ	Ala 795	Val	Phe	Arg	Ser	Lys 900	
		gtg Val														2448
tua Sur	oda Pro	det Pro	ett Leu 320	ess Pro	goo Ala	gag Glu	aag Lys	caa Glm 325	goa Ala	ttg Leu	geg Ala	gaa Glu	aat Asn 830	tot Ser	ato Lle	2496
		tad Tyr 838														0544
aqa Arg	gaa Glu 650	caa Gln	31y	tto Phe	tiog Ser	gg:: Gly 855	gto Val	ata Leu	daa Ulr	tog Ser	agd Ser 860	t (t Cys	gad Asp	ada Pro	ato Ile	.15 32
		god Ala														.:640
		tto Phe														.:638
		gta Val														2734
		god Ala 915														.784
		tog Ser														U832
		aac Asn														2880
		gtt Val														2928
		gaa Glu														.:976
		ago Ser 995						taç	Đ.							3093

```
1000
\cdot ... 12 \cdot PET
+1.113 + ur.known
-1.20
UNDB - H:trAPAO (Exophiala spinifera)
1...........
Hull - misc_feature
1..2 - 73)..(1575)
1.13 espl mat
41. 2 for
d.ll misc feature
(1.72 + 1576) ... (1611)
d. Little apader sequence
\cdot \subseteq (1)
+:..: 1: misc_feature
+1.11.31 + (1612)...(3000)
Hill Bir KitrAPAO
-1112 (01-
-Mill: misc feature
+0.0120 - +1612)...(1614)
-00030 extra lysine
-(400)- 25
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                            10
Leu Ser Ala Ser Leu Ala Ser Gly Ala Pro Thr Val Lys Ile Asp Ala
            20
Gly Met Val Val Gly Thr Thr Thr Thr Val Pro Gly Thr Thr Ala Thr
        35
                            40
                                                 45
Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala Ser Pro Thr Arg Phe
    50
                        55
Ala Pro Pro Thr Arg Pro Val Pro Trp Ser Thr Pro Leu Gln Ala Thr
                    70
Ala Tyr Gly Pro Ala Cys Pro Gln Gln Phe Asn Tyr Pro Glu Glu Leu
                85 90 95
Arg Glu Ile Thr Met Ala Trp Phe Asn Thr Pro Pro Pro Ser Ala Gly
                                105
```

Glu	Ser	Glu 115	Asp	Cys	Leu	Asn	Leu 120	Asn	Ile	Tyr	Val	Pro 126	Gly	Thr	Glu
Asn	Thr 130	Asrı	Lys	Ala	Val	Met 135	Val	Trp	Ile	Tyr	Gly 140	Gly	Ala	Leu	Glu
Tyr 145	Gly	Trp	A≋r.	Ser	Phe 150	His	Leu	Tyr	Asp	Gly 155	Alā	Ser	Phe	Ala	Ala 160
Asn	Glr.	Asp	Vál	Ile 165	£,1A	'/al	Thr	Ile	Asn 170	Tyr	Arq	Thr	Asn	Ile 175	Leu
Glγ	₽he	Pro	Ala 180	Alâ	Pro	G1r.	Leu	Pro 185	Il∈	Thr	Gln	Arq	Asn 190	Leu	Gly
Phe	Leu	Asp 195	Glr.	Arg	Phe	Alā	1eu 200	Asp	Trp	Väl	Gln	Arq .:01	Asn	lle	Alā
Alā	Phe 210	Glγ	Gly	Азр	Pro	Arg 215	Lys	Val	Thr	Ile	Phe 220	GLY	Gln	Ser	Alā
Gly 225	Gly	Arg	Ser	Val	Asp 230	Val	Leu	Leu	Thr	Ser 235	Met	Pro	His	Asr.	Pro 240
Pro	Phe	Arç	Ala	Ala 245	Ile	Met	Glu	Ser	Gly 250	Val	Ala	Asn	Tyr	Asr. 255	Phe
Pro	Lys	Glγ	Asp 260	Leu	Ser	Glu	Pro	Trp 265	Asrı	Thr	Thr	Val	Gln 270	Ala	Leu
Asn	Cys	Thr 275	Thr	Ser	Ile	Asp	Ile 230	Leu	Ser	Суѕ	Met	Arg 285	Arg	Val	Asp
Leu	Ala 290	Thr	Leu	Met	Asn	Thr 295	Ile	Glu	Gln	Leu	Gly 300	Leu	Gly	Phe	Glu
Tyr 305	Thr	Leu	Asp	Asn	Val 31:)	Thr	Ala	Val	Tyr	Arg 315	Ser	Glu	Thr	Ala	Arg 320
Thr	Thr	Gly	Asp	Ile 325	Ala	Arg	Val	Pro	Val 330	Leu	Val	Gly	Thr	Val 335	Ala
Asn	Asp	Gly	Leu	Leu	Phe	Val	Leu	Gly	Glu	Asn	Asp	Thr	Gln	Ala	Tyr

34¢	345	350

Leu	Glu	G1 u 355	Alá	Ile	Pro	Asn	Gln 360	Pro	Asp	Leu	Tyr	Gln 365	Thr	Leu	Leu
Gly	Ala 370	Tyr	Pro	Ile	Эlү	Ser 375	250	Gly	Ile	Gly	Ser 380	Pro	Glr.	Asp	Gln
Ile 335	Ala	Ala	Ile	Glu	Thr 391	Glu	Val	Arg	Ph∈	Gln 395	Суя	200	Ser	Ala	Ile 400
Val.	Ala	Gln	Asp	Ser 405	Arg	Asn	Arq	Gly	Il∈ 410	Pro	Ser	Trp	Arq	Tyr 415	Tyr
T;r	Asn	Ala	Thr 420	Phe	Glu	Asn	Бива	Glu 425	Leu	5µ+∙	Pro	Gly	Ser 431	Glu	Val
Tyr	His	Ser 435	Ser	Glu	Vā.l.	Gly	Met 440	Vāl	P'ne	Gly	Thr	Tyr 445	Pro	Val	Ala
Ser	Ala 450	Thr	Alá	Leu	Glu	Ala 455	Glar.	Th.r	Ser	Lys	Tyr 460	Met	Glrı	Gly	Ala
Trp 465	Ala	Ala	Phe	Ala	Lys 470	Aerı	Pro	Met	Asr.	Gl; 475	Pro	Gly	Trp	Lys	Gln 480
			Val	485					49C					495	
Asp	Val	Ser	Pro 500	Ala	Thr	Ile	Asp	Gln 505	Arg	СУв	Ala	Leu	Tyr 510	Thr	Arg
		515	Glu				520					525	-		
	530		Gly			535					540				
545			Gly		550					555				-	560
Gln	Ala	Ala	Gly	Leu 565	Ser	Cys	Leu	Val	Leu 570	Glu	Ala	Met	Asp	Arg 575	Val

Gly	Gly	Lys	Thr 580	Leu	Ser	Val	Gln	Ser 585	Gly	Pro	Gly	Arg	Thr 590	Thr	Ile
Asn	Asp	Leu 5 +5	Gly	Ala	Ala	Trp	Ile 600	Asn	Asp	Ser	Asn	Gln 605	Ser	Glu	Val
Ser	Arg 610	L+:u	Phe	Glu	Arg	Phe 615	His	Leu	Glu	Slγ	Glu 620	Leu	Gln	Arg	Thr
Thr 625	317	A.·r.	Ser	Ile	His 630	Gln	Ala	Gln	Asp	Gly 635	ſhr	Thr	Thr	Thr	Ala 640
Pro	Tir	Gly	Asp	Ser 645	Le∙a	Leu	Ser	Glu	Glu 650	Val.	Ala	Ser	Ala	Leu 655	A.l.a
Glu	Let.	Leu	Pro 660	Val	Trp	Ser	Glr.	Leu 665	Ile	Glu	Glu	His	3er 670	Leu	Gin
Asp	Leu	178 675	Ala	Ser	Pro	Gln	Ala 680	Lys	Arg	Leu	Asp	Ser 685	Val	Ser	Phē
Ala	His 690	Tyr	Cys	Glu	Lys	Glu 695	Leu	Asn	Leu	Pro	Ala 700	Vāl	Leu	Gly	Väl
Ala 705	Asr.	Gln	Ile	Thr	Arg 710	Ala	Leu	Leu	Gly	Val 715	Glu	Ala	His	Glu	Ile 720
Ser	Met	Leu	Phe	Leu 725	Thr	Asp	Tyr	Ile	Lys 730	Ser	Ala	Thr	Gly	Leu 735	Ser
Asn	Ile	Pł:∈	Ser 740	Asp	Lys	Lys	Asp	Gly 745	зіу	Glr.	Tyr	Met	Arg 750	Cys	Lys
Thr	Gly	Met 755	Gln	Ser	Ile	Cys	His 760	Ala	Met	Ser	Lys	Glu 765	Leu	Val	Pro
Gly	Ser 770	Val	His	Leu	Asr.	Thr 775	Pro	Val	Ala	Glu	Ile 780	Glu	Gln	Ser	Alā
Ser 785	Gly	Cys	Thr	Val	Arg 790	Ser	Ala	Ser	Gly	Ala 795	Val	Phe	Arg	Ser	Lys 800

Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu Thr Phe 810 815 Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile 325 320 Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp 840 845 Ang Glu Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 355 860 Ser The Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile 97C 875 880 Thir Cys Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser 895 395 395 Lys Gln Val Arg Glr. Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 900 905 910 Glu Ash Ala Gly Ala Gln Val Pro Glu Pro Ala Ash Val Leu Glu Ile 925 925 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 43D 935 940 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 945 950 955 Lys Ser Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 965 970 975 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 980 985 990 Val Ala Ser Leu Val Pro Ala Ala 995 1000 11.10 25 2.11 2.176

+212 · DNA +213 · Unknown

```
-C.E.E.D.-
****** signal:BEST1 mature:spacer:K:trAPAO (Exophiala spinifera)
41. Oak
<...: sig_peptide</pre>
       (1)..(72)
4..3 Barley alpha amylase signal sequence
(, , ) -
4..1 - mat peptide
<...21 - (73)..(1545)</pre>
1.5 BEST1 mature
31. 1 Feb.
Marie misc feature
+1.7.1 + +1546)..(1534)
H. 23 - spacer sequence
412265
:::11: misc feature
+1.5.1. (1535)..(2373)
H:trAPAO
+(\underline{-}\,\underline{-}\,\underline{-}))(\cdot) +
-17011- CDS
%:3.0 (1)..(2973)
41235
-:<u>1226:</u>-
Hill: misc feature
+12222 + (1585) \dots (1587)
+:223: Extra lysine
+1400> 26
atg god aad aag cad otg agd otd too otd tto otd gtg otd otd ggo
                                                                             48
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                 -20
                                       -15
                                                             -10
eto too goo too eto goo ago ggo acg gat tit eeg gto ego agg acc
                                                                             96
Leu Ser Ala Ser Leu Ala Ser Gly Thr Asp Phe Pro Val Arg Arg Thr
                                  1
             -1
hat sty ggs sag gtt sag gga sty gos ggg gas gtg atg ags ttt egs
                                                                            144
Asp Leu Gly Gln Val Gln Gly Leu Ala Gly Asp Val Met Ser Phe Arg
    10
                                                                            192
aga ata esc tat goa gog seg seg gtg gge ggg etg egt tgg aag eeg
Gly Ile Pro Tyr Ala Ala Pro Pro Val Gly Gly Leu Arg Trp Lys Pro
25
                                            35
                      3:0
                                                                  40
ded daa dad god ogg dod tigg gog gigd gitt ogd dod god abb daa titt
                                                                            240
```

Pro Gln His A	la Arg Pro 45	Trp Ala G	Sly Val Ar 50	og Pro Ala '	Thr Gln I 55	Phe
gg: too gas : Gly Ser Asp :	ys Phe Gly	Ala Ala T		ng Lys Gly .		
och ggo gtg : Pr: Gly Val J 75						
ggr got aaa : Gly Ala Lys P 90	oo ggo dag ro Gly Gln	tad ddd g Tyr Pro V 95	de atg gt Gl Met Va	ic tgg gtc al Trp Val 1 111	tad ggd ( Tyr Gly (	ggo 384 31y
ggo tto god ( Gly Phe Ala ( 10)				yr Tyr Asp	Bly Glu A	
ot: gog oga : Deu Ala Arg G						
ath otg ggo t The Dea Gly P 1		His Pro G		er Arq Glu .		
gga act tog g Gly Thr Ser 3 155						
tga gtg cag a Trp Val Glr. 3 170	er Asm Ala					
acq gtc ttt g Thr Val Phe G 135				la Ile Gly	Leu Leu I	
add tog dog d Thr Ser Pro L						
oca ggg otg a Pro Gly Leu T J		Leu Ala Ti		la Asp Ser .		
ggo gag ogo s Gly Glu Arg 5 235		_			-	
goo acc otg a Ala Thr Leu M 250	et Ala Arg					
otg ogo agg o Leu Arg Arg P						

265	270	275	230
obg dag abd gab agd Pro Gln Thr Asp Ser 285	Ala Ala Ile Al	g gog gg; dag dtg gd a Ala Gly Gln Leu Al 290	g dog git 960 a Pro Mal 299
ogg gto otg ato gga Arg Val Beu Ile Gly 300			e Leu Gly
ege gog eeg atg gag Ang Ala Pro Met Glu 315			
dag tit ggd gad daa Gln Phe Gly Asp Gin 330		g gog gortgo tat bo 1 Ala Ala Cys Tyr Pr 340	
ggo ogg god acg oca Gly Arg Ala Thr Pro 345		o gog og: ato tto gg 1 Ala Ar: Ile Phe Gl 357	
cag tto ast ogg ggg Gln Phe Asn Arg Gly 369	Val Ser Ala Pn		
gge geg eee gtg tgg Gly Ala Pro Val Trp 380		e Asr. Gly Asr. Thr Gl	a Gly Gly
aga gog oog got add Ang Ala Pro Ala Thr 395		a att och tad git it 1 Ile Pro Tyr Val Ph 403	
tto aag oto gao gag Phe Lys Leu Asp Glu 410		o gat tgg dog dod ga e Asp Trp Pro Pro Gl 420	
		a otg atg too too go n Leu Met Ser Ser Al 435	
egg tte gee aag aat Arg Phe Ala Lys Asn 445		o ggg gan geo ott ac a Gly Asp Ala Leu Th 450	
ges tat tot acg ggs Ala Tyr Ser Thr Gly 460		•	u Gly Arg
gog gog gtg gtg tog Ala Ala Val Val Ser 475		e ato ben bet tge go r Ila Pro Pro Cys Al 485	
		o gga ggo ago ggo gg y Gly Gly Ser Gly Gl 500	

aaa gad aab Lys Asp Asn 505											1632
ttg gag acg Leu Glu Thr		lys Va		Ala A							168)
ott gag gog Leu Glu Ala			317								1928
ggt bod ggd Gly Pro Gly 555	Arg Thr										1776
gad agd aad Asp Ser Asn 570			. Ser.								1824
gag ggc gag Glu Gly Glu 585											1872
gad ggt ada Asp Gly Thr				Tyr G							1920
gag gtt gca Glu Val Ala			. Gla								196:
ato gaa gag Ile Glu Glu 635	His Ser										016
ogg ato gad Arg Lew Asp 650			e Ala								.1064
ttg dot got Leu Pro Ala 665											2112
ggt gtg gaa Gly Val Glu			-	Met I				-			.:1.60
	Ala His 685 acc ggt	Glu Ile	e Ser : : aat : Asn	Met I 6 att t	Leu Phe 890 ita tag	Leu	Thr aag	Asp aaa	Tyr 695 gac	Ile ggc	.:1560 .::108

						gtt Val											0304
						tog Ser 750											.:35.2
						ago Ser											<u>24</u> 00
						ada Thr											448
						tat Ser											. 4 9 <del>6</del>
						Trp											
Ü						330 830											. 5 93
						tad Ser											2640
						cag Gln											0668
						god Ala											2736
						gaa Glu											2784
Ç						gto Val 910											2832
	_			-	_	oog Pro			-	-			_		-		<u>1880</u>
						aaa Lys											2928
C	aa	cga	ggt	got	gca	gaa	gtt	gtg	gct	ags	ctg	gtg	cca	gca	gca	tag	2976

Gln Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 955 960 965

-0.11 fr 27 ::::: 991 till - PRT Hills Unknown 2.1. (1) +iii. > signal:BEST1 mature:spacer:K:trAPAO (Exophiala spinifera) -1.1. III ---:::1 misc feature 11546)..(1534) H.M. spacer sequence - 11110 +1.1.1 misc\_feature (1585)..(2973) Hillian K:trAPAO -1-1-1 AUDIA misc feature

HU210 misd\_feature HU200 (1585)..(1587) HU200 Extra lysine

-(400)- 27

Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly -20 -15 -10

Leu Ser Ala Ser Leu Ala Ser Gly Thr Asp Phe Pro Val Arg Arg Thr -5 -1 1 5

Asp Leu Gly Gln Val Gln Gly Leu Ala Gly Asp Val Met Ser Phe Arg 10 15 20

Gly Ile Pro Tyr Ala Ala Pro Pro Val Gly Gly Leu Arg Trp Lys Pro 25 30 35 40

Pro Gln His Ala Arg Pro Trp Ala Gly Val Arg Pro Ala Thr Gln Phe 45 50 55

Gly Ser Asp Cys Phe Gly Ala Ala Tyr Leu Arg Lys Gly Ser Leu Ala 60 65 70

Pro Gly Val Ser Glu Asp Cys Leu Tyr Leu Asn Val Trp Ala Pro Ser 75 80 85

Gly	Ala 90	ГЛЗ	Pro	Gly	Gln	Tyr 95	Pro	Val	Met	Val	Trp 100	Val	Tyr	Gly	Gly
Gl; 10]	Phe	Ala	Gly	Gly	Thr 110	Ala	Alā	Het	Pro	Tyr 115	Tyr	Asp	Gly	Glo	Ala 120
Let.	Ala	Arg	Glı.	Gly 125	Val	Val	Val	∵al	Th.r 130	Phe	Asr.	Tyr	Arg	Thr 133	Asr.
He	Leu	Gly	Ph€ 14+	Phe	Ala	His	Pro	Gly 145	Let	Ser	Arg	Glu	Ser 150	Pro	Thr
Gly	Thr	Ser 155	Gly	Asr.	Tyr	Gly	Leu 160	Leu	Asp	Ile	Leu	Ala 165	Ala	Leu	Ārģ
Trp	Val 170	Gln	Ser	Asr.	Ala	Arg 175	Alā	Ph€	Gly	Gly	Asp- 180	2ro	Gly	Arg	Vâ.
Thr 185	Val	Phe	Gly	Glu	Ser 190	Ala	Gly	Ala	Ses	Ala 195	I1e	Gly	L∈u	Leu	Deu 200
Thr	Ser	Pro	Leu	Ser 205	Lys	Gly	Leu	Phe	Arg 210	Gly	Alâ	Ile	Leu	Glu 215	Ser
Pro	Gly	Leu	Thi 220	Arq	Pro	Leu	Alā	Thr 225	heu	Ala	Asp-	Ser	Ala 230	Ala	Ser
Gly	Glu	Arg 235	Ъец	Asp	Ala	Asp	Leu 240	Ser	Arg	Let:	Arg	Ser 245	Thr	Asp	Pro
Ala	Thr 250	Leu	Met	Ala	Arg	Ala 255	Asp	Λla	Ala	Arq	Pro 260	Ala	Ser	Arg	Asp
Leu 265	Arg	Arg	Pro	Arq	Pro 270	Thr	Glγ	Prc	lle	Val. 275	Asr	Gly	His	Val	Leu 280
Pro	Gln	Thr	Asp	Ser 235	Ala	Alá	Ilé	Alā	Ala 290	Gly	Gln	Leu	Ala	Pro 295	Val.
Arg	Val	Leu	11:: 300	Gly	Thr	Asrı	Ala	Asp 305	Glu	Gly	Arg	Ala	Phe 310	Leu	Gly
Arg	Ala	Pro	Met	Glu	Thr	Pro	Ala	Asp	Tyr	Gln	Ala	Tyr	Leu	Glu	Ala

		315					320					325	
Gln	Ph∈	Gly	Asp	Gln	Ala	Ala	Ala	Val	Ala	Ala	Cvs	Tvr	Pro

Gln	Phe 330	Gly	Asp	Gln	Ala	Ala 335	Ala	Val	Ala	Ala	Cys 340	Tyr	Pro	Leu	Asp
Gly 345	Arg	Alā	Thir	Pro	Lys 350	Glu	Met	Val	Ala	Arg 355	Ile	Phe	Glγ	Asp	Asri 360
Gln	Phe	Asrı	Arg	Gly 365	Val	Ser	Ala	Phe	3er 370	Glu	Ala	Leu	Val	Ard 37!	Glm
Gly	Alā	Pro	Val 380	Trp	Arq	Tyr	Glr.	Phe 385	Asn	Gly	Asn	Thr	Glu 390	Gly	GLY
Arg	Alā	Pro 395	Alā	Thr	$\mathrm{Hi}\varepsilon$	Bly	Ala 400	Glu	Ile	Pro	Tyr	Val 405	2he	Gly	Val
Phe	Lys 410	Leu	Asp	Glu	Leu	Gly 41!	Terr	Phe	Asp	Trp	Pro 420	Pro	Glu	Gly	Pro
Thr 425	Pro	Ala	Asp	Arg	Ala 430	Let.	Gly	Glr.	Leu	Met 435	Ser	Ser	F-1A	Trį,	Val 440
Arg	Phe	Ala	Lys	Asn 445	Gìÿ	Asp.	Pro	Ala	Gly 450	Asp	Alā	Leu	Thr	Trr. 45!	Pro
Ala	Tyr	Ser	Thr 460	Glÿ	Lys	Ser	Thr	Met 465	Thr	₽h∈	Gly	Pro	Gl·1 470	Gly	Arg
Ala	Alâ	Val 475	Val	Ser	Pro	Gly	Pro 480	Ser	Ile	Pro	Pro	Cys 485	Ala	Asp	Gly
Ala	Lys 490	Ala	Gly	Gly	Gly	Gly 495	Ser	Gly	Gly	Gly	Ser 500	Gly	Gly	Gly	Ser
Lys 505	Asp	Asn	Val	Ala	Asp 510	Val	Val	Val	Vāl	Gly 515	Ala	Gly	Leu	3er	Gly 520
Leu	Glu	Thr	Ala	Arg 525	Lys	Val	Glr	Ala	Ala 530	G17	Leu	Ser	Суз	Leu 535	Val

Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gl<br/>n Ser 540 545 550

Gly	Pro	Gly 555	Arg	Thr	Thr	Ile	Asn 560	Asp	Leu	Gly	Ala	Ala 565	Trp	Ile	Asn
Asp	Ser 570	Asn	Gln	Ser	Glu	Val 575	Ser	Arg	Leu	Phe	Glu 590	Arg	Phe	His	Leu
Glu 585	Gly	Glu	Leu	Gln	Arg 590	Thr	Thr	Gly	Asn	3er 593	Ile	His	Glr.	Ala	Gln 600
Asp	Gly	Thr	Thr	Thr 605	Thr	Alâ	Pro	Tyr	Gly 610	Aεp	Ser	Leu	Leu	Ser 615	Glu
Glu	Val	Ala	Ser 620	Alā	Leu	Alâ	Glu	Leu 625	Leu	Pro	Val	Trp	Ser 630	Glr.	Leu
Ile	Glu	31u 635	His	Ser	Leu	Gln	Asp 640	Leu	Lys	Ala	Ser	Pro 645	Glr.	Ala	Lys
Arg	Leu 650	Asp	Ser	Val	Ser	Phe 655	Ala	His	Tyr	Cys	Glu 660	Lys	Glu	Leu	Asn
Leu 665	Pro	Ala	Val	Leu	Gly 670	Val	Ala	Asn	Glr	11e 675	Thr	Arg	Ala	Leu	Leu 680
Gly	Vāl	Glu	Ala	His 685	Glu	Ile	Ser	M∙et.	Leu 690	Phe	Leu	Thr	Asp	Tyr 695	Ile
Lys	Ser	Ala	Thr 700	Gly	Leu	Ser	Asn	Ile 705	Phe	Ser	Asp	Lys	Lys 710	Asp	Gly
Gly	Gln	Tyr 715	Met	Arg	Cys	Lys	Thr 720	Gly	Met	Gln	Ser	Ile 725	Сув	His	Ala
Met	Ser 730	Lys	Glu	Leu	Val.	Pro 735	Gly	Ser	Vāl	His	Leu 740	Asn	Thr	Pro	Val
Ala 745	Glu	Ile	Glu	Gln	Ser 750	Ala	Ser	Gly	Суз	Thr 755	Val	Arg	Ser	Alā	Ser 760
Gly	Ala	Val	Phe	Arg 765	Ser	Lys	Lys	Val	Val 770	Val	Ser	Leu	Pro	Thr 775	Thr

Leu Tyr Pro	Thr Leu 730	Thr Phe		ro Pro	Leu Pro		lu Lys 90	Gln
Ala Leu Ala 795		Ser Ile	Leu G. 300	ly Tyr	Tyr Ser	Lys I. 805	le Val	Phe
Val Trp Asp °10	Lys Pro	Trp Trp 815	Arg G	lu Gln	Gly Phe 820	Ser G.	ly Val	Leu
Gln Ser Ser ≥35	Cys Asp	Pro Ile 330	3er ₽	he Ala	Arg Asp 335	Thr Se	er Ile	Asp 540
Val Asp Arg	Gln Trp 845	Ser Ile	Thr C	ya Phe 850	Met Val	Gly A	sp Pro 855	Gly
Arg Lys Trp	Ser Glr 360	Gln Ser		lm Val 65	Arg Gln		er Val 70	Trp
Asp Gln Leu 875		Ala Tyr	Glu A. 380	er Ala	Gly Ala	Gln V: 385	al Pro	Blu
Pro Ala Asr. 890	Val Leu	Glu Ile 895	Glu T	rp Ser	Lys Gln 900	Gln T	yr Phe	Gln
Gly Ala Pro 905	Ser Ala	Val Tyr 910	Gly L	eu Asn	Asp Leu 915	lie Tl	hr Leu	Gly 920
Ser Ala Leu	Arg Thr 925	Pro Phe	Lys S	er Val 930	His Phe	Val G.	ly Thr 935	Glu
Thr Ser Leu	Val Trp 940	Lys Gly		et Glu 45	Gly Ala		rg Ser 50	Gly
Gin Arg Gly 955		Glu Val	Val A. 960	la Ser	Leu Val	Pro A. 905	la Ala	
#1210 > 28 #1211 + 3618 #1212 + DNA #1313 + Unkn	own							
√220 × √223 × gst:	espl:sp:	K:trAPAO	(Exop	hiala s	spinifer	a)		

```
-(3.20) ×
addin cos
\{1,2,1\} (1)...(3615)
- 1. T. 1
1.1.1
        misc_feature
-11.11.11.11
       (11)...(637)
       gar + polylinker
-1.1.
-(...10)
-Chile mat_peptide
+0.1.11 (red3)..(21+)
Külle espl mat
·::.::
HOURS miss feature
\pm 0.179 \pm (0.191)...(2...6)
Hills: spacer sequence
*111111
Hall misd feature
\pm (2.10) = (.122\overline{7})...(3615)
HILLER K:trAPAO
41....*IDD4
%1221  misc_feature
%17.00  (2227)..(22.09)
HUUSH extra lysine
714/0077 28
atg too cot ata off ggt tat tgg aaa att laag ggo off gtg baal
                                                                                    4.5
Met Ser Fro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
                   -.1.15
                                             -220
                                                                      -215
coc act ega ett ett - ttg gaa tat ett gaa - gaa aaa tat gaa gag Pro Thr Arg Leu Leu - Leu Glu Tyr Leu Glu - Glu Lys Tyr Glu Glu
                                                                                     90
                   -.110
                                             -205
                                                                      -200
cat tig tat gad doo gat gaa ggt gat aaa ligd dga aad aag
                                                                                    135
His Leu Tyr Glu Ard Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys
                   -1.45
                                             -190
                                                                      -185
tit gaa tig ggt tig gag tit ood aat dit oot tat tat att gat
She Glu Neu Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp
                                                                                    180
                   -180
                                             -175
                                                                      -170
gut gat git ada tia laca dag tot atg god lato ata ogt tat ata
                                                                                    225
Gly Asp Val Lys Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile
                   -165
                                             -160
get gad aag dab aad latg ttg ggt ggt tgt loba aaa gag ogt gbal
                                                                                    270
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Ala Asp Lys His	Asn Met Leu 3	ely Gly Cys Pro Ly -145	s Glu Arg Ala -14)
		og git tig gat at la Val Lau Asp Il -130	
		aa gad tit gas ad ys Asp Phe Glu Th +115	
		aa atg olg aaa at lu Met Leu Lys Me -100	
	Thr Tyr Leu As	t ggt gar bat gta n Gly Asp His Val 1 -85	
		t git gri tia tad . p Val Vai Leu Tyr I O	
		a git byt tit aaa : u Val Cyw Phe Bys : -50	
		d tig ass tod agd : r Leu Lys Ser Ser : -38	
		d add thi ggt ggt ( a Thr Phe Gly Gly ( )	
	Leu Val Pro Ar	t gga tod dog gaar g Gly Ser Pro Glu -9	
		g gto ggo aog aot . 1 Val Gly Thr Thr ' 15	<del>_</del>
		g tic tid ggd gtt : u Phe Leu Gly Val 30	
•		t act cqt ccc gtq o o Thr Ang Pro Val 45	
		t dda gda tgd ddt ( y Pro Ala Cys Pro ( 60	
		t acg at pgcc tgg e Thr Met Ala Trp	

	70			75			80		
odo Pro									934
gto Val 100									1032
ggt Gly (									1030
got . Ala .									11.2 :
aga - Arg '									1176
cag Glm .									122;
caş Gln 1 180									1271
ttt ( Phe (									1336
atg Met									1368
get . Ala .									1416
act ( Thr									1464
atg Met . 260									1513
gga Gly									1560
tot Ser (									1606

gto ggg abg Val Gly Thr 310						Val					1556
gad add C44 Asp Thr Gln 325					Pro :						1704
tar bag act Tyr Glr. Thr 340											175.2
tog oot baa Ser Pro Gln											190)
tqt dat tat Cys Pro Ser				o Ser							1848
tut tgg ogd Swr Trp Arg 390						Asrı					1896
oot ggg too Pro Gly Ser 405					Vai ∪						1944
acg tat cct Thr Tyr Pro 426											1993
tac atg cag Tyr Met Glr											2040
ect ggg tgg Pro Gly Trp	Lys Gln 455	Val Pro	Asr. Val 460	l Ala )	Ala 1	Leu (	Gly	3er 465	Pro	Gly	2088
aaa god atd		dad ata	tiot land								2136
Lys Ala Ile 470	Glr. Val					īle A					213.7
	acg cyt	Asp Val	Ser Pro 475 act gag	Ala g ttg	Thr .  ggd .  Gly	lle / aca	Asp 480 ato	Glr. gog	Arg ccg	Oys agg	2184
470 gcc ttg tac Ala Leu Tyr	acg cyt Thr Arg	Asp Val tat tat Tyr Tyr 430 ago ggo	Ser Pro 475 act gad Thr Glu	a Ala g ttg u Leu c ago	gga .	lle . aca Thr 495	Asp 480 ato Ile	Glr. gog Ala	Arg cog Pro	Cys agg Arg	

					cag Gln											2323
					ggg Gly				-	-						.1376
					aad Asn											.:42.4
					tod Ser 835				-	-			_	-		.147.2
					act Thr											. 524
					aat Pro											. 56%
					gaa Glu											.616
					gac Asp											_664
					gog Ala 665											. 711
					gca Ala											2760
-	-				agc Ser	_					_			-	_	0808
					aat Asr.											2856
					aca Thr											A904
					ggc Gly 745											2952
att	gag	cag	tcg	gca	tee	gge	tgt	aca	gta	cga	tog	gee	teg	ggc	gee	3000

Ile	Glu	Gln	Ser	Ala 760	Ser	Gly	Cys	Thr	Val 765	Arg	Ser	Ala	Зеr	Gly 770	Ala	
					aag Lys											2048
					tha Ser											3096
					otg Deu											3144
					ege Arg 825											3 1 912
					tda Ser											3340
					add Thr											3888
					aag Lys											3336
					gag Glu											3384
			_		gag Glu 905		-	-	-	-					_	3432
					Gly Gly											3480
					aag Lys											3528
					tat Tyr											3576
					gtg Val								tag			3618

```
-:211- 1205
-1.12 + PRT
41. 134 Unknown
41. Bijus
*(1.24)**
41.31c misc_feature
4. d24 (1)...(697)
40.050 gat + poly!inker
-12.260-
H. J.D. make feature
\pm 1.029 \pm 0.13\overline{1})..(2226)
st. 1334 spader sequence
-12.260-
State mass feature
+0.029 + (2027)...(3615)
HLLLS: K:trAPAO
*12.000 ×
(2010 miso_feature
(0.20 (0.27)..(2019)
-00030 extra lysine
-(400) 29
Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
             -225 -020 +015
Pro Thr Arg Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu
             -210 -205
His Leu Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys
              -195
                               -190
                                                -185
Phe Glu Leu Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp
              -160
                                                 -170
Gly Asp Val Lys Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile
             -165
                            -160
                                                -155
Ala Asp Lys His Asn Met Leu Gly Gly Cys Pro Lys Glu Arg Ala
             -150 -145 -140
Glu Ile Ser Met Leu Glu Gly Ala Val Leu Asp Ile Arg Tyr Gly
              -135
                               -130 -125
```

Val Ser Arg Ile Ala Tyr Ser Lys Asp Phe Glu Thr Leu Lys Val -120 -115 -110
Asp Phe Leu Ser Lys Leu Pro Glu Met Leu Lys Met Phe Glu Asp Arg -105 -95
Leu Cys His Lys Thr Tyr Leu Asn Gly Asp His Val Thr His Pro Asp -80 -80
Phe Met Leu Tyr Asp Ala Leu Asp Val Val Leu Tyr Met Asp Pro Met -75 -65
Cys Leu Asp Ala Phe Pro Lys Leu Val Cys Phe Lys Lys Arg Ile Glu -61 -50
Ala Ile Pro Gln Ile Asp Lys Tyr Leu Lys Ser Ser Lys Tyr Ile Ala -48 -30
Trp Pro Leu Gln Gly Trp Gln Ala Thr Phe Gly Gly Gly Asp His Pro -25 -20 -15
Pro Lys Ser Asp Leu Val Pro Arg Gly Ser Pro Glu Phe Ala Pro Thr -10 -5 -1 1
Val Lys Ile Asp Ala Gly Met Val Val Gly Thr Thr Thr Thr Val Pro 5 16 15
Gly Thr Thr Ala Thr Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala 20 25 30 35
Ser Pro Thr Arg Phe Ala Pro Pro Thr Arg Pro Val Pro Trp Ser Thr 40 45 50
Pro Leu Gln Ala Thr Ala Tyr Gly Pro Ala Cys Pro Gln Gln Ph÷ Asn 55 60 65
Tyr Pro Glu Glu Leu Arg Glu Ile Thr Met Ala Trp Phe Asr. Thr Pro 70 75 80
Pro Pro Ser Ala Gly Glu Ser Glu Asp Cys Leu Asn Leu Asn Ile Tyr 85 90 95

 $\label{thm:conditional} \mbox{Val Pro Gly Thr Glu Asn Thr Asn Lys Ala Val Met Val Trp Ile Tyr}$ 

100					105					111					115
Gly	Gly	Ala	Leu	Glu 120	Tyr	Gly	Trp	Asn	Ser 125	Phe	His	Leu	Tyr	Asp 130	Gly
Ala	Зег	Phe	Ala 135	Alā	Asn	Gln	Asp	Val 140	Ile	Ala	Val	Thr	Ile 145	Asr.	Tyr
Arg	Thr	Asn 150	Ile	le.	Gly	Phe	Pro 15:	Ala	Ala	Pro	Gln	Leu 160	Pro	110	'I'nr
Gln	Arg 165	Asn	Leu	Glÿ	Phe	150 170	Asp	Gln	Arg	Ph∈	Ala 175	Leu	Asp	'."rrp	Val
Gln 130	Arg	Asn	Ile	Alā	Ala 185	Ph.e	31;/	Gly	Asp	Pro 190	Ārģ	Lys	Val	Thr	Ile 195
Phe	·3lγ	Gln	Ser	Ala 200	Gly	Gly	Arq	Ser	Val 205	Asp	Val	Leu	Leu	Th.r	Ser
Met	Pro	His	Asn 215	Pro	Pro	Ph.e	Arc	Ala 220	Ala	Ile	Met	Glu	Ser 225	1317.	Val
Ala	Asr:	Tyr 230	Asn	Phe	Pro	Lys	Gly 235	Asp	Leu	Ser	Glu	Pro 240	Trp	Asr.	Thr
Thr	Val 245	Gln	Ala	Leu	Asn	Cys 250	Thr	Thr	Ser	Il≑	Asp 255	Ile	Leu	Ser	Cys
Met 260	Arg	Arg	Val	Asp	Leu 265	Ala	Thr	Leu	Met	Asr. 270	Thr	Ile	Glu	Glr.	Leu 275
Gly	Leu	Gly	Phe	Glu 280	Tyr	Thr	Leu	Азр	Asn 235	Val	Thr	Ala	Val	Tyr 290	Arg
Ser	Glu	Thr	Ala 295	Arg	Thr	Th.r	Gly	Asp 300	Ile	Ala	Arg	Vā l.	Pro 305	Val	Leu
Val	βly	Thr 310	Val	Ala	Asrı	Asp	Gl∵ 315	Leu	Leu	Phe	Val	Leu 320	Gly	Glu	Asn
Asp	Thr 325	Gln	Ala	Tyr	Leu	Glu 330	Glu	Alá	Ile	Pro	Asri 335	Gln	Pro	Asp	Leu

Tyr 340	Gln	Thr	Leu	Leu	Gly 345	Ala	Tyr	Pro	Ile	31y 350	Ser	Pro	Gly	Il⊖	Gly 355
Seer	Pro	Gln	Asp	Gln 360	Il€	Ala	Ala	Il€	Glu 365	Thr	Glu	Val	Arg	Phe 370	Gln
C∵s	Pro	Ser	Ala 375	Lle	Val	Ala	Gln	Asp 381	Ser	Arg	Asn	Arg	31y 385	Il⊕	Pro
Sec	Trp	Arg 390	Tyr	Tyr	Тут	Asn	Ala 395	Thr	Phe	Glu	Asn	Leu 400	Glu	Leu	Phe
P:no	Gly 405	Ser	Glu	Val	Tyr	His 410	Ser	Ser	Glu	Val	Gly 415	Met	Val	Phe	Gl;
Tl.r 410	Tyr	Pro	Val	A.l.a	Ser 425	Ala	Th.r	Ala	Leu	Glu 430	Ala	Glm.	ľh:	Ser	Lуз 435
Tyr	Met	Glrı	Gly	Ala 440	Trp	Ala	Ala	Ehe	Ala 445	Був	Asn	Pro	Met	Asr. 450	Gl;
Pro	Gly	Trp	Lys 455	Glm	Väl	Pro	Asn	Val 460	Ala	Ala	Leu	Gly	Ser 465	Pro	Gl;
Lys	Ala	.I1∈ 47⊕	Gln	Val	Asp	Val	Ser 475	Fro	Ala	Th.r	Ile	Asp 480	Glri	Arg	Cya
Ala	Leu 485	Tyr	Thr	Arg	Tyr	Tyr 490	Thr	Glu	Leu	Gly	Thr 495	Ile	Ala	Pro	Arg
Thr 500	Ph€	Gly	Gly	Gly	Ser 505	Gly	Gly	Gl;	Ser	Gly 510	Gly	Gly	Ser	Lys	Asp. 515
Asn	Val	Ala	Asp	Val 520	Val	Val	Vāl	317	Ala 525	∃ly	Leu	Ser	31y	Leu 530	Glu
Thr	Alá	Arg	Lys 535	Val	Gln	Ala	Ala	Gly 540	Leu	Ser	Cys	Leu	Val 545	Leu	Glu
Ala	Met	Asp 550	Arg	Val	Gly	Gly	Lys 555	Thr	Leu	Ser	Val	Gln 560	Ser	Gly	Pro

Sly	Arg 565	Thr	Thr	Ile	Asrı	Asp 570	Leu	Gly	Ala	Ala	Trp 575	lle	Asn	Asp	Ser
Asn 580	GIn	Ser	Glu	Val	Ser 585	Arg	Leu	Ph⊖	Glu	Arg 590	Phe	His	Leu	314	31y 595
Glu	Leu	Gln	Arg	Thr 600	'I'hr	Gly	Asn	Ser	Ile 6)5	His	Glm	Alâ	Gln	Asp 610	Sly
Thr	Thr	Thr	Thr 615	Alā	Pro	Туг	Gly	Asp 620	Ser	Leu	Let	Ser	Glu 625	G1u	Val
Ala	Ser	Ala 630	Leu	Alâ	Glu	ັ⊥⊖ນ	Leu 635	Pro	Val	Trp	Ser	Glr. 640	Leu	Ile	Glu
Glu	His 645	Ser	Seu	Gln	Asp	1eu 650	lys	Alā	Ser	Pro	Glr. 635	Ala	Lys	Arq	Leu
Asp 660	3er	Vāl	3er	Pr.e	Ala 665	His	Tyr	Суз	Glu	Lya 670	Glu	Leu	Asn	Leu	2ro 675
Ala	Val	Leu	Gly	Val 680	Ala	Asr.	Gln	Ile	Thr 685	Arģ	Ala	Leu	Leu	Gly 690	Val
Glu	Ala	His	Glu 695	Ile	Ser	Met	Leu	Phe 700	Leu	Thr	Asp	Tyr	Ile 705	ьγε	Ser
Ala	Thr	Gly 710	Leu	Ser	Asn	I.l.∈	Phe 715	Ser	Asp	Ly $arepsilon$	Lys	Asp 720	Gly	Gly	Gln
Tyr	Met 725	Arg	Cys	Lys	Thr	Gly 730	Met	Glrı	Ser	Ile	Cys 735	His	Alā	Met	Ser
Lys 740	Glu	Leu	Val	Pro	Gly 745	Ser	Val	His	Leu	Asn 750	Th.r	Pro	Vāl.	Ala	Glu 755
Ile	Glu	Gln	Ser	Ala 760	Ser	Gly	Cys	Thr	Val 765	Arg	Ser	Ala	Ser	Gl; 770	Ala
Val	Phe	Arg	Ser 775	Lys	Lys	Val	Val	Val 780	Ser	Leu	Pro	Thr	Thr 785	Leu	Tyr

Pro Thr Leu Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu 790 795 800 Ala Glu Ash Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp 310 315 305 Asp Lys Pro Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Leu Gln Ser M.DD 925 930 835 Ger Cys Asp Pro Ile Ser Phe Ala Arg Asp Thr Ser Ile Asp Val Asp 840 845 850 Ard Glr. Trp Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly Ard Lys 855 860 365 Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp Asp Gln 870 £ 7.5 881 Leu Arg Ala Ala Tyr Glu Asn Ala Gly Ala Glr Val Pro Glu Pro Ala E90 Ash Mal Leu Glu Ile Glu Trp Ser Lys Gln Glr. Tyr Phe Glr. Gly Ala 905 910 915 (a(j(j) Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala 920 925 930 bou Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu Thr Ser 935 940 945 Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg 950 955 Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala

-210 - 30

-211 - 3591

212 DNA

-213 Unknown

- 22.20 s

+32.23 · Orf of BEST1:K:trAPAO fusion pGEX-4T-1 (Exophiala spinifera)

970

+(220)→

<pre>#221% misc_feature #221% misc_feature #2221%</pre>									
NULL - Mat_peptide - (2168 NULL - (688))(2168 NULL - (68871 mature									
<pre>-id.no -id.lo misc_festice -id.lo (2164)(218 -id.lo spater seque</pre>	9)								
File - miso_feature File - miso_feature File - FileTO)(358 File - KitrAPAO									
<pre>Hills + Hill + CDS Hill + CDS Hill + (1+(3586 Hills +</pre>									
+020 + +021 + misc_feature +0210 + (0300)(200 +00.3 + extra lysine	2)								
H400 30 atg top opt ata ota Met fer End Ile Leu -22	Gly Tyr						al Gl		5
eed act ega ett ett Pro Thr Arg Leu Leu -21	Leu Glu							ū	0
cat ttg tat gag ogo His Leu Tyr Glu Arg -19	Asp Glu	i ggt ga i Gly As	t aaa p Lys -190	tgg Trp	cga a Arg A	ac a Asn L	ys Ly	g 13 s 85	.5
ttt qaa ttg ggt ttg Phe Glu Leb Gly Leu -13	Glu Phe						le Ās		0
ggt gat gtt aaa tta Gly Asp Val Lys Leu -16	Thr Glr						yr Il		:5
get dad aag dad aad Ala Asp Lys His Asn									0

	-150	-145	-140
gag att toa atg Glu Ile Ser Met	ott gaa gga gog gt Leu Glu Gly Ala Va -135	et ttg gat att aga ta al Leu Asp Ile Arg Ty -130	o ggt 315 r Gly -1.5
		ac ttt gaa act cts aa sp Phe Glu Thr Leu Ly ~115	
		tg otg - saa atg tto ga et Neu - Lys Met Phe Gl -100	
		gat bat gts acc bat y Asp His Val Thr His 5 -80	
		gtt tta tad atg gad L Val Deu Tyr Met Asp -68	
		i tgt tit aaa ada ogt L Cys Phe Dys Dys Arg -50	
		g awa tod ago awg tat 1 Lys Ser Ser Lys Tyr -35	
		g tit ggt ggt ggd gad o Phe Gly Gly Gly Asp -1)	
		a top dog gaa tto abg / Ser Pro Glu Phe Thr -1 1	
		g gtt dag gga otg god n Val Glr. Gly Leu Ala 15	
		ogoa gog obg bog gtg o Ala Ala Pro Pro Val 30	
		c ogg oed tgg gog ggd a Arg Pro Trp Ala Gly 45	
		e tte gge geg ged tat s Phe Gly Ala Ala Tyr 69	
		o gag gad tyt ott tad o Glu Asp Cys Leu Tyr 80	

	gog Ala							984
	tac Tyr							1032
	ggs Gly							1080
	ogg Ang							1123
	ags Ser 180							1.76
	got Ala							1224
	gga Gly							1273
	att Leu							1320
	ata Leu							1368
	god Ala 230							1416
	acc Thr							1464
	tog Ser							1912
	cat His							1560
	geg Ala							1608

		ttc Phe 310														1656
		atg Leu														1704
		ece Pro														105.1
		gly														1 ( ) )
		gtg Val														1848
		gag Glu 390														1836
		tta Pha														1944
		gag Glu														1990
		god Ala														2040
		acc Thr														2188
		gag Glu 470														2136
		gog Ala														.:184
		gga Gly														.1.2.3.1
		ttg Leu			-		_	_	-		-	_	_	-		2280
ctg	tcc	tga	ctc	gtt	ctt	gag	gog	atg	gat	cạt	gta	999	gga	aag	act	2323

Leu	Ser	Суз	Leu 535	Val	Leu	Glu	Ala	Met 540	Asp.	Arg	Val	Glγ	31; 54:	Lys	Thr	
					ggt Gly											2376
					gal: Asp											2424
gaa Glu 530					ga # 31 : 581											2473
					gad Asp											.152 1
	_				gaņ Glu		-	-	-			-				J. 5-6-1
gta Val																2616
					ogg Arg											2664
gag Glu 660																1.711.
ada Thr		-	-		ggt Gly											.:760
					aaq Lys											2808
gac Asp	_		-			-			-	-					_	.:856
Ser					atş Met											.:904
ata Leu 740					got Ala 745											.1952
gta Val					ggs Gly											3000

	760	765	770
	Thr Lea Tyr Pro	acc ttg aca ttt tc Thr Leu Thr Phe Se 730	
		gaa aat tot ato ot Glu Asn Ser Ile Le E)	u Gly Tyr Tyr
		aag oog tgg tgg og Lys Pro Trp Trp Ar 815	
		tgt gab bod atb to Cys Asp Pro Ile Se 330	
		caa tgg too att ac Gln Trp Ser Ile Th 848	
	Gly Arg Lys Trp	tod daa dag tod aa Ser Gin Gin Ser Ly 880	
		ogo goa goo tao ga Arg Ala Ala Tyr Gi 88	u Asn Ala Gly
		gtg oto gaa ato ga Val Leu Glu Ile Gl 895	
		age gee gte tat gg Ser Ala Val Tyr Gl 910	
		aga acg ccg ttc aa Arg Thr Pro Phe Ly 925	s Ser Val His 930
Phe Val Gly Thr 935	Glu Thr Ser Leu	gtt tgg aaa ggg ta Val Trp Lys Gly Ty 940	r Met Glu Gly 945
		got goa gaa gtt gt Ala Ala Glu Val Va 96	l Ala Ser Leu 0
ytg oca goa goa Val Pro Ala Ala 965	tag		3591

<210> 31
<211> 1196

```
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Rills - Unknown
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-UNLOG Orf of BEST1:K:trAPAO fusion pGEX-4T-1 (Exophiala spinifera)
- <u>11</u> . O. -
-12.13 misc_feature
eth... (1)... (687)

0.5 gst + polylinker
%1.lp misc feature
(2.64)..(2199)
Multi- spacer sequence
Mill misc_feature
42...6 (2200)..(3538)
%1.30* K:trAPAO
(2), (6)
%1.10 musc feature
+0.119 - (2230)...(2252)
30.30 extra lysine
Kinu: 31
Met Ser Pro Ile Lou Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
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Leu Arg Trp Lys Prc Pro Gln His Ala Arg Pro Trp Ala Gly Val Arg 40 45 50

Pro Ala Thr Gln Phe Gly Ser Asp Cys Phe Gly Ala Ala Tyr Leu Arg 55 60 65

Lys Gly Ser Leu Ala Pro Gly Val Ser Glu Asp Cys Leu Tyr Leu Asn 70 75 80

Val Trp Ala Pro Ser Gly Ala Lys Pro Gly Gln Tyr Pro Val Met Val 85 90 95

Trp Val Tyr Gly Gly Gly Phe Ala Gly Gly Thr Ala Ala Met Pro Tyr 100 105 110 115

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Arg	Glu	Ser 150	Pro	Thr	Gly	Thr	Ser 155	Gly	Asr.	Tyr	Gly	Leu 160	Leu	Asp	Ile
Leu	Alá 165	Ala	Leu	Ārģ	Trp	Val 170	Gln	Ser	Asr.	Ala	Arg 171	Ala	Phe	$\operatorname{Gl}_Y$	Gly
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Arg	Ser 245	Thr	Asp	Pro	Ala	Thr 250	Leu	Met	Alā	Arg	Alā 255	Asp	Alā	Älä	Arg
Pro 260	Ala	Ser	Arg	Asp	Leu 265	Arg	Arg	Pro	Arg	Pro 270	Thr	Gly	Pro	Ile	Val 275
Asp	Gly	His	Val	Leu 280	Pro	Gln	Thr	Asp	Ser 285	Ala	Alā	Ile	Ala	Ala 290	Gly
Gln	Leu	Ala	Pro 295	Va.l.	Arg	Val.	Leu	11e 300	Gly	Thr	Asn	Ala	Asp 305	Glu	Gly
Arg	Ala	Phe 310	Leu	Gly	Arg	Alâ	Pro 315	Met	Glu	Thr	Pro	Ala 320	Asp	Tyr	Gln
Ala	Tyr 325	Leu	Glu	Ala	Gln	Phe 330	Gly	Asp	Gln	Ala	Ala 335	Ala	Val	Ala	Ala

Cys 340	Tyr	Pro	Leu	Asp	Gly 345	Arg	Ala	Thr	Pro	Lys 350	Glu	Met	Val	Ala	Arg 355
Ile	Phe	Glγ	Asp	Asr: 360	Gln	Phe	Asn	Arg	Gly 365	Vā l	Ser	Ala	₽he	Ser 370	Glu
Alā	Leu	Val	Arg 375	Glr:	G Y	Ala	Pro	Val 380	Trp	Arg	Tyr	Gln	2he 385	Asn	Gly
A.ar:	Thr	Glu 390	Gly	Gly	Arg	Ala	Pro 395	Ala	Thr	His	Gly	Ala 400	Glu	lle	Pro
Tyr	Val 405	Phe	Gly	Val	Phe	Lys 410	Leu	Asp	Glu	Leu	Gly 415	Leu	Phe	Asp	Trp
Pro 420	Pro	Glu	Gly	Pro	Thr 425	Pro	Ala	Asp	Arq	Ala 430	Leu	Gly	Glr.	Leu	Met 435
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Ala	Leu	Thr	Trp 455	Pro	Al.ā	ТУт	Ser	Thr 460	Gly	Lys	Ser	'Thr	Met 465	Thr	Phé
Gly	Pro	Glu 470	Gly	Arg	Aìa	Ala	Val 475	Val	Ser	Pro	Gly	Pro 480	Ser	Ile	Pro
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Ser	Pro 645	Glr.	Alâ	Lys	Arģ	Leu 630	qaA	Ser	Val	Ser	Phe 655	Ala	Hi	Tyr	Cys
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Th.r	Arg	Ala	Leu	Leu 680	Gly	Val	Glu	Alā	His 685	Glu	Ile	Ser	Ме*	Leu 640	Phe
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Val	Arg	Ser	Alā	Ser 760	Gly	Ala	Val	Phe	Arg 765	Ser	Lys	Lys	Val	Val 770	Val
Ser	Leu	Pro	Thr 775	Thr	Leu	Tyr	Pro	Thr 780	Leu	Thr	Phe	Ser	Pro 785	Pro	Leu
Pro	Ala	Glu	Lys	Gln	Ala	Leu	Ala	Glu	Asn	Ser	Ile	Leu	Gly	T∵r	Tyr

790 795 800

Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly 305 810 815

Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile Ser Phe Ala Arg 9.00 825 830 835

AMP Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile Thr Cys Phe Met 340 845 350

Mai Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser Lys Gln Val Arg 855 860 865

Gin Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly 875 880

Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys 885 890 895

Gln Glr. Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp 905 915

Lou Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His 920 925 930

Fhe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly 935 940 945

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-1320 -

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qua ygg tat tot cae gte gge gta ggo cea gae gga ygg agg tat gtg Ala Gly Tyr Ser His Val Gly Val Gly Pro Asp Gly Gly Arg Tyr Val 20 25 30	36
asa ata got gga bag att gga baa gab got bog ggs gtg ada gab bot Thr Ile Ala Gly Gln Ile Gly Gln Asp Ala Ser Gly Val Thr Asp Pro 35 40 45	144
the tab gag aaa dag got god baa goa too god aat hoog ega got ogd Ala Tyr Glu Lys Gln Val Ala Gln Ala Phe Ala Ash Leu Ang Ala Cys 50 55 60	193
off got goa got gga god abt toa aad gab gtb abb aag otb aat tab New Ala Ala Val Gly Ala Thr Ber Ash Asp Val Thr bys Dew Ash Tyr GO 70 75 80	240
two ato gto gao tao goo oog ago asa oto aco gos att gga gat ggg Tyr lle Val Asp Tyr Ala Pro Ser Lys Lei Thr Als :le Gly Asp Gly 85 90 95	118 }
ong aay get acc tit ged oft gad agg ofd oot oot igd acg ofg gitg Leu Bys Ala Thr Phe Ala Leu Asp Arg Leu Bro Pro Cys Thr Leu Val 199 - 195 - 110	336
doa gtg tog god ttg tot toa oot gaa tac oto ttt gag gtt gat god Pro Val Ser Ala Leu Ser Ser Pro Glu Tyr Leu Phe Glu Val Asp Ala 115 120 125	384
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aac gad otd ggd got gog tgg atd aat gat agd aat dag god gaa gta Asn Asp Leu Gly Ala Ala Trp Ile Asn Asp Ser Asn Gln Ala Glu Val 195 200 205	624
too aga ttg ttt gaa aga ttt bat ttg gag ggb gag otb bag agg abg	672

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					cat His 230											72)
					ttg Leu											1163
					tgg Trp											- 16
					opt Pro											8 <b>6</b> 4
					aag Lys											+13
					ege Ang 310											96]
					acc Thr											100%
					aag Lys											1056
					att Ile											1104
					aac Asn											1153
too Ser 385	Gl7. ādc	tqt Cys	aca Thr	gta Val	oga Arg 330	tog Ser	gdd Ala	tog Ser	ggc Gly	gcc Ala 395	gtg Val	tto Phe	oga Arg	agc Ser	aaa Lys 400	1000
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acc tgt tto atg gtc gga gad Thr Dys Phe Met Val Gly Asp 485		
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qag mad god ggg god daa gtd Gru Ash Ala Sly Ala Glh Val 515		
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+0010 + 33 +0011 + 600 +0012 + PRT +0013 + Unknown		
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Ala	Tyr 50	Glu	Lys	G1r.	Val	Ala 55	Gln	Alā	Phe	Alā	As:. 60	Leu	Arg	Alâ	Cys
Leu 65	Ala	Ala	'7a.l	Gly	Ala 7)	Thr	Ser	Aan	Asp	Val 75	Th:	Lys	Leu	Aar.	Tyr ()
Tyr	Il:	Val	As p	Tyr 85	Ala	Pro	Ser	Lys	Leu 90	Th:r	Alā	I.le	Gly	Asp 95	$\operatorname{GL} Y$
Leu	Lys	Ala	Thr 100	Phe	Ala	Leu	Азр	Arg 105	Leu	Pro	Pro	Cys	Thr	Leu	Väl
Pro	Vāl	Ser 115	Alā	Leu	Ser	Ser	Pro 120	Glu	Туг	Leu	Ph∈	G.l u 1: 5	Val	Азр	Alia
Thr	Ala 130	Leu	Val	Pro	Gly	His 135	Thr	Thir	Pro	Asp	Asr. 140	Val	Ala	Asp	Väl
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Gln	Ala	Ala	Gly	Leu 165	Ser	Cys	Leu	Vāl	Leu 170	Glu	Ala	Met	Asp	Arg 175	Val
Gly	Gly	Lÿs	Thr 180	Leu	Ser	Val	Gln	Ser 185	Gly	Pro	$\operatorname{Gl}_Y$	Ar.ā	Thr 190	Thr	Ile
Asn	Asp	Leu 195	Gly	Alā	Ala	Trp	Ile 200	Asn	Asr	Ser	Asn	G1n 205	Ala	Glu	Val
Ser	Arg 210	Leu	Ph⊜	Glu	Arg	Phe 215	His	Leu	Glu	${\sf Gl}_Y$	Glu 220	Leu	Gln	Arg	Thr
Thr 225	Gly	Asn	Ser	Ile	His 230	Gln	Ala	Gln	Asp	31.y 235	Thr	Thr	Thr	Thr	Ala 240
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Ser	Pro	Pro	Leu 420	Pro	Ala	Glu	Lys	Gln 425	Ala	Leu	Ala	Glu	Asrı 430	Ser	Ile
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tabatogtog aptabgobbb gagbaaabtb abbgbaattg gagatgggbt gaagtbtabb	(3.14)
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+:210 + 36

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+00120 PRT

H213D Exophilia spinifera

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Leu Ala Ala Val Gly Ala Ser Ser Asn Asp Val Thr Lys Leu Asn Tyr 65 70 75 80

Tyr Ile Val Asp Tyr Ala Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly 85 90 95

Leu Lys Ser Thr Phe Ala Leu Asp Arg Leu Pro Pro Cys Thr Leu Val

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quaquatag					1929

-02100 33 -02110 600

H.1120 PRT

+0.130 Exophiala spinifera

+14001 33

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Tyr Ile Val Asp Tyr Ala Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly

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Lys	Val	Val	Val	Ser 405	L⊕u	Pro	Thir	Thr	Leu 410	Tyr	Pro	Thr	Leu	Thr 415	Phe
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Ser 465	Ph∈	Ala	Arg	Asp	Thr 470	Ser	Ile	Glu	Val	Asp 475	Arq	Gln	Trp	Ser	Ile 480
Thr	Cys	Phe	Met	Val 485	Gly	Asp	Pro	Gly	Arg 490	Lys	Trp	Ser	Gln	Gln 495	Ser
Lys	Glr.	Val	Arg 500	Gln	Lys	Ser	Val	Trp 505	Asp	Gln	Leu	Arg	Ala 510	Ala	Tyr
Glu	Asr.	Ala 515	Glÿ	Ala	Gln	Val	Pnc 520	Glu	Pro	Alā	Asn	Val 525	Leu	Glu	Ile
Glu	Trp 530	Ser	Lys	Gln	Gln	Tyr 535	Phe	Gln	Gly	Ala	Pro 540	Ser	Ala	Val	Tyr

Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 545 550 560 Lys Cys Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 575 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 Val Ala Ser Leu Val Pro Ala Ala 3.35  $40.10 \times 39$ HIII - 1930 HILL - DNA Exorhiala spinifera 4221 - Intron Z222 (739)..(811) 3000 B <220 -K221 × Intron <122117 (1134)..(1187)42232 <22000 <0:21> misc\_feature <2222 (649)..(649) <223> n = A,T,C or G <400> 39 atggcactty caccgageta cateaatese ecaaacgteg ecteeccage agggtattet 60 cacgteggeg taggeceaga eggagggagg tatgtgacaa tagetggaca gattggacaa 120 gacgettegg gegtgaeaga ecetgeetae gagaaacagg ttgeecaage attegecaat 130 ctgcgagett gccttgetge agttggagee actteaaaeg aegteaecaa geteaattae 240 tacategieg actaegeece gageaaacte acegeaatty gagatggget gaaggetace 300 tttgesetty acaggeteec teettgeaeg etggtgeeag tgteggeett gtetteaeet 360 gaatacetet ttgaggttga tgccacggeg ctggtgeegg gaeacaegae ceeagacaae 420 gttgoggaeg tggtagtggt gggegetgge ttgageggtt tggagaegge aegeaaagte 480 caggoogoog gtotgtootg cotogttott gaggogatgg atogtgtagg gggaaagact 540

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<sup>·1211&</sup>gt; 598

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<sup>&</sup>lt;213> Exophiala spinifera

<sup>&</sup>lt;2200%

<sup>&</sup>lt;2212 MISC FEATURE

 $<sup>\</sup>times 2229 - (216) \dots (216)$ 

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Thr	lle	Ala 35	Gly	Gln	Ile	Gly	Gln 40	Asp	Ala	Ser	Gly	Val 45	Thr	Asp	Pro
Ala	Tyr 50	Glu	Lys	Gln	Val	Ala 55	Gln	Ala	Phe	Ala	Asn 60	Leu	Arg	Ala	Cys
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Tyr	Ile	Val	Asp	Tyr 85	Ala	Pro	Ser	Lys	Leu 90	Thr	Alā	Ile	Gly	Asp 95	Gly
Leu	Lys	Ala	Thr 100	Phe	Ala	Leu	Asp	Arg 105	Leu	Pro	Pro	Cys	Thr 110	Leu	Val
Pro	Val	Ser 115	Ala	Leu	Ser	Ser	Pro 120	Glu	Tyr	Leu	Phe	Glu 125	Val	Asp	Ala
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Gly 225	Asn	Ser	Ile	His	Gln 230	Ala	Gln	Asp	Gly	Thr 235	Thr	Thr	Thr	Ala	Pro 240
Tyr	Gly	Asp	Ser	Leu 245	Leu	Ser	Glu	Glu	Val 251	Alä	Ser	Ala	Leu	Ala 255	Glu
Leu	Leu	Pro	Val 260	Trp	Ser	Gln	Leu	:le 265	Glu	Glu	Ніз	Ser	Leu 27û	Gln	Asp
Le:u	Lys	A.l.a. 273	Ser	Pro	Gln	Ala	lys 2∃(•	Arg	Leu	Asp	Ser	Val 295	Ser	Pł.e	Allā
His	Tyr 290	Суз	Glio	L;/3	Glu	Leu 295	A.≩r.	Leu	Pro	Ala	Val 300	Leu	Gly	Val	A.sr.
Gln 305	Ile	Thr	Arg	Ala	Leu 310	Leu	G17	Val	Glu	Ala 315	His	Glu	Ile	Ser	Met 320
Leu	Ph:e	Leu	Thr	Asp 325	Tyr	He	Lys	Ser	Ala 330	Th.r	Gl;	Leu	Ser	Asn 335	fle-
Pł.∈	Ser	Asp	Lys 340	Lys	Asp	Gly	Gly	Gln 345	Туг	Met	Arq	Cys	Lys 350	Thr	G1;
Met	Gln	Ser 355	Ile	Суз	His	Ala	Met 360	Ser	Lys	Glu	Leu	Val 365	Pro	Gly	Ser
Vāl	His 370	Leu	Asr.	Tt.r	Pro	Val 375	Ala	Glu	Ile	Glu	Glr. 390	Ser	Ala	Ser	Gly
Cys 385	Thr	Val	Arg	Ser	Ala 390	Ser	Gly	Ala	Val	Ph.e 395	Arq	Ser	Ьys	Lys	Val 400
Val	Val	Ser	Leu	Pro 405	Thir	Thr	Leu	Tyr	Pro 410	Thr	Leu	Thr	Phe	Ser 415	Pro
Pro	Leu	Pro	Ala 420	Glu	Lys	Gln	Ala	Leu 425	Alā	Glu	Asrı	Ser	Ile 430	Leu	Gly
Tyr	Tyr	Ser	Lys	Ile	Val	Phe	Val	Trp	Asp	Lys	Pro	Trp	Trp	Arg	Glu

435 440 445

Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile Ser Phe 450 455 460

Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile Thr Cys 47) 475

Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser Lys Gln 490

Val Arg Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr Glu Asn 500 505

Ala Gly Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile Glu Trp 515 520

Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr Gly Leu 535 540

Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe Lys Ser 545 550 555 560

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412231-

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+ <u>2230</u>+

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Gly 545	Leu	Asn	Asp	Leu	Ile 550	Thr	Leu	Gly	Ser	Ala 555	Leu	Arg	Thr	Pro	Phe 560
Lys	Ser	Val	His	Phe 565	Val	Gly	Thr	Glu	Thr 570	Ser	Leu	Val	Trp	Lys 575	Gly

Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 Val Ala Ser Leu Val Fro Ala Ala 595 H210 - 48 1392 · 1392 3212 - DNA -1213 - Unknown -1220 -+CLM3 + Cys (-) APAO; removal of cys 461 (Exophiala spinifera) ·12.20  $\cdot 0.01 \cdot \text{CDS}$ +1.22 + (1)..(1392)41JJ3 K <400 - 48 ass gas ase gtt geg gas gtg gts gtg gtg ggs get ggs ttg ags ggt 4.9 Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly ting gag acg goa ego aaa gio bag goo goo ggt big too igo bio git 95 Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val 20 25 30 ctt gag geg atg gat egt gta ggg gga aag aet etg age gta eaa teg 14.1 Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 ggt see gge agg acg act ate aac gae ete gge get geg tgg ate aat 193 Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn 55 gac age aac caa age gaa gta tee aga ttg ttt gaa aga ttt cat ttg 240 Asp Ser Asn Gln Ser Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu gag ggc gag etc cag agg acg act gga aat toa atc cat caa gca caa 288 Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln gac ggt aca acc act aca gct cet tat ggt gac tee ttg etg age gag 336 Asp Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu 100 105 gag gtt gca agt gca ctt gcg gaa ctc ctc ccc gta tgg tct cag ctg 384 Glu Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu 115 120 atc gaa gag cat agc ctt caa gac ctc aag gcg agc cct cag gcg aag 432 Ile Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys 130 135

0gg Arg 145	ctc Leu	gac Asp	agt Ser	gtg Val	ago Ser 150	ttc Phe	gcg Ala	cac His	tac Tyr	tgt Cys 155	gag Glu	aag Lys	gaa Glu	cta Leu	aac Asn 160	430
ttg Leu	cct Pro	gct Ala	gtt Val	ata Seu 165	31y	gta Val	gca Ala	aac Asn	cag Gln 170	atc Ile	aca Thr	ogo Arg	gct Ala	atg Leu 175	ot : Leu	5.23
gyt Gly	gtg Val	gaa Glu	gcc Ala 130	cac His	gag Gl:	atc Ile	agc Ser	atg Met 185	ott Leu	ttt Phe	oto Leu	acc Thr	gac Asp 190	tac Tyr	ato Ile	576
aag Lys	agt Ser	gcc Ala 195	acc Thr	gly	oto Lea	agt Ser	aat Asn 200	att Ile	ttd Phe	tog Ser	cet qaA	aag Lys 205	aaa Lys	gac Asp	gga Gly	61
egy A alad	cag Gln 210	tat Tyr	atg Met	ega Arg	tgd Cys	aaa Lys 215	aca Thr	gg: Gly	atg Met	cag Gln	tog Ser 220	att [le	dys dys	cat His	gcc Ala	672
atg Met 225	tca Ser	aag Lys	gaa Glu	ctt Leu	gtt Val 230	cca Pro	Gly	tca Ser	gtg Val	cac His 235	oto Leu	aac Asn	acc Thr	ccc Pro	gto Val 240	720
got Ala	gaa Glu	att Ile	gag Glu	cag Gln 245	tog Ser	gca Ala	tcc Ser	Gly ggs	tgt Cys 250	aca Thr	gta Val	ega Arg	tog Ser	gcc Ala 255	tog Ser	768
ggc Gly	gcc Ala	gtg Val	ttc Phe 260	ega Arg	agc Ser	aaa Lys	aag Lys	gtg Val 265	gtg Val	gtt Val	tog Ser	tta Leu	ccg Pro 270	aca Thr	acc Thr	816
ttg Leu	tat Tyr	ccc Pro 275	acc Thr	ttg Leu	aca Thr	ttt Phe	tca Ser 280	cca Pro	cct Pro	ctt Leu	ccc Pro	god Ala 285	gag Glu	aag Lys	caa Gln	864
					tat Ser											911
					tgg Trp 310											960
caa Gln	tcg Ser	agc Ser	tcc Ser	gac Asp 325	ccc Pro	atc Ile	tica Ser	ttt Phe	gcc Ala 330	aga Arg	gat Asp	acc Thr	agc Ser	atc Ile 335	gac Asp	1008
gtc Val	gat Asp	cga Arg	caa Gln 340	tgg Trp	tcc Ser	att Ile	acc Thr	tgt Cys 345	ttc Phe	atg Met	gtc Val	gga Gly	qac Asp 350	ccg Pro	gga Gly	1056
cgg Arg	aag Lys	tgg Trp 355	tcc Ser	caa Gln	cag Gln	tcc Ser	aag Lys 360	cag Gln	gta Val	cga Arg	caa Gln	aag Lys 365	tct Ser	gtc Val	tgg Trp	1104

gae caa ete ege gee gee tae gag aac gee ggg gee saa gte eea gag — 1 Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly Ala Gln Val Pro Glu 370 — 375 — 380	152
cog god aac gtg etc gaa atc gag tgg teg aag cag cag tat tte caa — 1 Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys Gln Gln Tyr Phe Gln 385 — 390 — 395 — 400	.200
gga get deg age ged gto tat ggg etg aac gat etc atc aca etg ggt — 1 Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly 405 — 410 — 415	.243
tog gog oto aga acg ocg tto aag agt gtt bat tto gtt gga abg gag — 1 Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 420 — 425 — 430	.296
aby tot tha git tigg aaa ggg tat atg gaa ggg god ata oga tog ggt — 1 Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 — 440 — 445	344
daa dga ggt get gea gaa gtt gtg get age etg gtg eea gea gea tag = 1 Gln Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 450 = 450	392
*:210 > 49 *:211 > 463 *:212 > PRT *:213 > Unknown	
+220> +223> Cys (-) APAO; removal of bysteine 461 (Exophiala spinifera)	
<pre>&lt;12233 Cys (-) APAO; removal of cysteine 461 (Exophiala spinifera)</pre>	
Cys (-) APAO; removal of cysteine 461 (Exophiala spinifera) 4400> 49  Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly	
Cys (-) APAO; removal of cysteine 461 (Exophiala spinifera)  4400> 49  Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly 1 5 10 15  Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val	
Cys (-) APAO; removal of cysteine 461 (Exophiala spinifera)  4400> 49  Lys Asp Asn Val Ala Asp Val Val Val Val Gly Ala Gly Leu Ser Gly 1 5 10 15  Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val 20 25 30  Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser	
Cys (-) APAO; removal of cysteine 461 (Exophiala spinifera)  4400> 49  Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly 1 5 10 15  Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val 20 25 30  Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 45  Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn	

Asp	Gly	Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu
Glu	Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leu	Pro	Val	Trp 125	Ser	Gln	Leu
Ile	Glu 130	Glu	His	Ser	Leu	Gln 135	Азр	Leu	lys	Alā	Ser 140	Pro	Glr.	Ala	Lys
Arg 145	Leu	Asp	Ser	Val	Ser 150	Ph∈	Alà	His	Туг	Cys 155	Glu	Lys	Glu	Leu	Asn 160
Leu	Pro	Alā	Val	Leu 165	Gly	Val	Alā	Asn	Gln 170	Ile	Thr	Arg	Alā	Leu 175	Leu
Gly	Val	Glu	Ala 180	His	Glu	Ile	Ser	Met 185	Leu	Phe	Leu	Thr	Asp 190	Tyr	Ile
Lys	Ser	Ala 195	Thr	Gly	Leu	Ser	Asr. 200	Il€	Phe	Ser	Asp	Lys 205	Lys	Asp	Gly
Gly	Gln 210	Тут	Met	Arg	Cys	Lys 215	Th.r	Gly	Met	Gln	Ser 220	Ile	Cys	His	Ala
Met 225	Ser	ГÀЗ	Glu	Leu	Val 230	Pro	Gly	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Ala	Ser	Gly	Cys 250	Thr	Va.l.	Arg	Зеr	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val. 265	Val	Val	Ser	Leu	Pro 270	Thr	Thr
Leu	Tyr	Pro 275	Thr	Leu	Thr	Phe	Ser 280	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln
Ala	Leu 290	Ala	Glu	Asn	Ser	Ile 295	Leu	Gly	Tyr	Tyr <sup>.</sup>	Ser 300	Lys	Ile	Val	Phe
Val 305	Trp	Asp	Lys	Pro	Trp 310	Trp	Arg	Glu	Gln	315	Ph⊕	Ser	Gly	Val	Leu 320

Glm Ser Ser Ser	Asp Pro 325	Ile Ser P	Phe Ala A 330	Arg Asp	Th: Ser	Ile Asp 335	
Va. Asp Arg Glr 340			Cys Phe 1 845	Met Val	Gly Asp 350	Pro Gly	
Ard Lys Trp Ser 358	o Gla Gla	Ser Lys G 360	Sln Val <i>i</i>		Lyw Ser 360	Val Trp	
Asp Glr. Leu Arg		Tyr Glu A 375	usn Ala (	Gly Ala 380	Glr. Val	Pro Glu	
Pro Ala Asr. Val 385	. Leu Glu 390	Ile Glu T		Lya Gln ( 395	Glr. Tyr	Phe Glr. 400	
Gly Ala Pro Ser	Ala Val 405	Tyr Gly L	eu Asn A 410	Asp Leu	lle Thr	Leu Gly 415	
Ser Ala Leu Arg 420		_	er Val : .25	dis Phe	Val Gly 430	Thr Glu	
Thr Ser Leu Val	. Trp Lys	Gly Tyr M 440	Met Glu (		Ile Arg 445	Ser Gly	
Gln Arg Gly Ala 450		Val Val A 455	ala Ser I	Leu Val 460	Pro Ala	Ala	
<pre>&lt;210&gt; 50 &lt;011&gt; 1392 &lt;012&gt; DNA &lt;013&gt; Unknown</pre>							
<010× <003× Cys (-)	APAO; rem	oval of c	:ys 359 a	and 461	(Еморhia	la spinifera)	
<pre><date< td=""><td>392)</td><td></td><td></td><td></td><td></td><td></td><td></td></date<></pre>	392)						
k400 + 50 awa gad awa gat Lys Asp Asn Val 1							48
ttg gag aog go: Leu Glu Thr Ala							96

			20					25					30			
ctt Leu	gag Glu	gcg Ala 35	atg Met	gat Asp	cgt Arg	gta Val	999 Gly 40	gga Gly	aag Lys	act Thr	atg Leu	agc Ser 49	gta Val	caa Gln	tog Ser	144
ggt Gly	ada Pro 50	ggc Gly	agg Arg	acg Thr	act Thr	atc Ile 55	aac Asn	gac Asp	et e Leu	ggc Gly	get Ala 60	gog Ala	tgg Trp	atc Ile	aat Asn	192
gac Asp 65	agc Ser	aac Asn	caa Gln	agc Ser	gaa Glu 70	gta Val	tcc Ser	aga Arg	tig Leu	ttt Phe 75	gaa Glu	aga Arg	ttt Fhe	cat His	ttg Leu 30	240
gag Glu	ggc Gly	gag Glu	ete Leu	cag Gln 85	agg Arg	acg Thr	act Thr	gga Gly	aat Asn 9:)	tda Ser	atc Ile	cat His	caa Gln	gca Ala 95	caa Gln	298
gac Asp	ggt Gly	aca Thr	acc Thr 100	act Thr	aca Thr	gct Ala	aat Pro	tat Tyr 105	ggt Gly	gab Asp	tdo Ser	tig Leu	ctg Leu 110	agc Ser	gag Glu	356
gag Glu	gtt Val	gca Ala 115	agt Ser	gca Ala	ctt Leu	gcg Ala	gaa Glu 120	ctc Leu	ctc Leu	occ Pro	gta Val	tag Trp 125	tct Ser	cag Gln	ctg Leu	354
atc Ile	gaa Glu 130	gag Glu	cat His	agc Ser	ctt Leu	caa Gln 135	gac Asp	ctc Leu	aag Lys	gcg Ala	agc Ser 140	oct Pro	cag Gln	gcg Ala	aag Lys	432
cgg Arg 145	ctc Leu	gac Asp	agt Ser	gtg Val	agc Ser 150	ttc Phe	gcg Ala	cac His	tac Tyr	tgt Cys 155	gag Glu	aag Lys	gaa Glu	cta Leu	aac Asn 160	480
ttg Leu	cct Pro	gct Ala	gtt Val	ctc Leu 165	ggc Gly	gta Val	gca Ala	aac Asn	cag Gln 170	atc Ile	aca Thr	cgc Arg	gct Ala	ctg Leu 175	ctc Leu	528
ggt Gly	gtg Val	gaa Glu	gee Ala 180	cac His	gag Glu	atc Ile	agc Ser	atg Met 185	ctt Leu	ttt Phe	ctc Leu	acc Thr	gac Asp 190	tac Tyr	atc Ile	576
aag Lys	agt Ser	gcc Ala 195	acc Thr	ggt Gly	ctc Leu	agt Ser	aat Asn 200	att Ile	ttc Phe	tag Ser	gac Asp	aag Lys 205	aaa Lys	gac Asp	ggc Gly	624
gly aga	cag Gln 210	tat Tyr	atg Met	cga Arg	tgc Cys	aaa Lys 215	aca Thr	ggt Gly	atg Met	cag Gln	tag Ser 220	att Ile	tcg Ser	cat His	gcc Ala	672
atg Met 225	tca Ser	aag Lys	gaa Glu	ctt Leu	gtt Val 230	cca Pro	ggc Gly	tca Ser	gtg Val	cac His 235	ctc Leu	aac Asn	acc Thr	ccc Pro	gtc Val 240	720
gct Ala	gaa Glu	att Ile	Glu	cag Gln 245	tcg Ser	gca Ala	tcc Ser	ggc Gly	tgt Cys 250	aca Thr	gta Val	cga Arg	tcg Ser	gcc Ala 255	tcg Ser	768

ggs Gly	qcc Ala	gtg 7al	ttc Phe 260	ega Arg	agc Ser	aaa Lys	aag Lys	gtg Val 265	gtg Val	gtt Val	tog Ser	tta Leu	oog Pro 270	aca Thr	acc Thr	216
			abc Thr													\ 6.
			gia Glu													911
			aig Lys													<u> </u> နှင့်()
			tod Ser													1008
			04a Gln 340													1056
			tad Ser													1104
			Arg cạc													1152
			gig Val													1200
			agc Ser													1248
tog Ser	gog Ala	oto Leu	aga Arg 420	acg Thr	oog Pro	ttc Phe	aag Lys	agt Ser 425	gtt Val	cat His	ttc Phe	gtt Val	gga Gly 430	acg Thr	gag Glu	1396
			gtt Val													1344
			get Ala												tag	1392

<sup>+1110 + 51</sup> +1211 + 463 +1212 + PRT

∹213→	Unkr	nown												
<2200 <22030	Cys	(-)	APAO	; re	mova	l of	cys	359	and	461	(Ex	ophi	ala	spinifera)
<(4()(.))	51													
Lys As 1	p Asn	. Val	Ala 5	Asp	Val	Val	Val	Val 10	Gly	'Ala	Gly	' Leu	Ser 15	Gly
Leu Gl	u Thr	Ala 20	Arg	Lys	Val	3ln	Ala 25	Ala	Gly	Leu	Ser	Cys 30	Leu	Val
L∈u Gl	u Ala 35	Met	Asp	Arg	Val	Gly 40	Gly	Lys	Thr	Leu	Ser 45	Val	Gln	Ser
Gly Fro	o Gly	Arg	Thr	Thr	Ile 55	Asn	Asp	Leu	Glγ.	Ala 60	Ala	Trp	Ile	Asn
Asp Se: 65	r Asn	Gln	Ser	Glu 70	Val	Ser	Arg	Leu	Phe 75	Glu	Arg	Phe	His	Leu 80
Glu Gly	7 Glu	Leu	Gln 85	Arg	Thr	Thr	Gly	Asn 90	Ser	Ile	His	Gln	Ala 95	Gln
Asp Gly	/ Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu
Glu Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leu	Pro	Val	Trp 125	Ser	Gln	Leu
Ile Glu 130	ı Glu	His	Ser	Leu	Gln 135	Asp	Leu	Lys	Ala	Ser 140	Pro	Gln	Ala	Lys
Arg Leu 145	Asp	Ser	Val	Ser 150	Phe	Ala	His	Tyr	Cys 155	Glu	Lys	Glu	Leu	Asn 160
Leu Pro	Ala	Val	Leu 165	Gly	Val	Ala	Asn	Gln 170	Ile	Thr	Arg	Ala	Leu 175	Leu
Gly Val	Glu	Ala 180	His	Glu	Ile	Ser	Met 185	Leu	Phe	Leu	Thr	Asp	Туг	Ile

Lys Ser Ala Thr Gly Leu Ser Asn Ile Phe Ser Asp Lys Lys Asp Gly 195 200 200

Gly	Gln 210	Tyr	Met	Arg	Cys	Lys 215	Thr	Gly	Met	Gln	Ser 220	Ile	Ser	His	Ala
Met 225	Ser	Lys	Glu	Leu	Val 230	Pro	Gly	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Ala	Ser	${ m Gl}_Y$	Cys 250	Thr	Val	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Val	Ser	Leu	Pro 270	Thr	Thr
Leu	Tyr	Pro 275	Thr	Leu	Thr	Phe	Ser 230	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln
Ala	Leu 290	Ala	Glu	Asn	Ser	Ile 295	L∙eu	Gly	Tyr	Tyr	Ser 300	Lys	Ile	Val	Phe
Val 305	Trp	Asp	Lys	Pro	Trp 310	Trp	Arg	Glu	Gln	Gly 315	Phe	Ser	Gly	Val	Leu 320
Gln	Ser	Ser	Ser	Asp 325	Pro	Ile	Ser	Phe	Ala 330	Arg	Asp	Thr	Ser	Ile 335	Asp
Val	Asp	Arg	Gln 340	Trp	Ser	Ile	Thr	Cys 345	Phe	Met	Val	Gly	Asp 350	Pro	Gly
Arg	Lys	Trp 355	Ser	Gln	Gln	Ser	Lys 360	Gln	Val	Arg	Gln	Lys 365	Ser	Val	Trp
Asp	Gln 370	Leu	Arg	Ala	Ala	Tyr 375	Glu	Asn	Ala	Gly	Ala 380	Gln	Val	Pro	Glu
Pro 385	Ala	Asn	Val	Leu	Glu 390	Ile	Glu	Trp	Ser	Lys 395	Gln	Gln	Tyr	Phe	Gln 400
Gly	Ala	Pro	Ser	Ala 405	Val	Tyr	Gly	Leu	Asn 410	Asp	Leu	Ile	Thr	Leu 415	Gly
Ser	Ala	Leu	Arg 420	Thr	Pro	Phe	Lys	Ser 425	Val	His	Phe	Val	Gly 430	Thr	Glu

Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 440 445	
Gln Arg Gly Ala Ala Glu Val Vil Ala Ser Leu Val Pro Ala Ala 455 460	
H210 × 52 H211 + 1392 H212 + DMA H213 + Unknown	
$\pm 120$ $\pm$ $\pm 25$ $\pm$ Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala sp	oinifera)
+0000+ +0001+ CDS +0002+ (1)(1392) +0003+	
-:400 - 52 aas gad aad gtt gog gad gtg gta gtg gtg ggd got ggd ttg agd ggt	43
Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly  1 5 10 15	1.9
tig gag acg gca cgc aaa gtc cag gcc gcc ggt ctg agc tcc ctc gtt Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Ser Leu Val 20 25 30	315
ctt gag dog atg gat ogt gta ggg gga aag act otg ago gta daa tog Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 45	144
ggt occ gge agg aeg act atc aac gae etc gge get geg tgg atc aat Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn 50 55 60	192
gac agc aac caa agc gaa gta too aga ttg ttt gaa aga ttt cat ttg Asp Ser Asn Gln Ser Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu 65 70 75 80	240
gag ggc gag etc cag agg acg act gga aat tea ate cat caa gca caa Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln 85 90 95	288
gac ggt aca acc act aca gct cct tat ggt gac toc tig ctg agc gag Asp Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu 100 105 110	336
gag gtt gca agt gca ctt gcg gaa ctc ctc ccc gta tgg tct cag ctg Glu Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu 115 120 125	384
ato gaa gag cat age ott caa gae ote aag gog age oot cag gog aag Ile Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys	432

					TIO					40.0				4 4 4	
480						tgt Cys 155									
523						atc Ile									
576						ttt Phe									
63.4						tog Ser									
672						cag Gln									
721)						cac His 235									
768						aca The									
816						gtt Val									
8.64						ctt Leu									
912					Ser	tat Tyr	$T_{Y}r$	Gly	Leu						
960						ggc Gly 315									
1008	_		e.		_	aga Arg	_					-	-	_	
1056						atg Met									
1104		-		-		oga Arg	-	_	_		-			-	

gad daa ete ege goa god tad gag aad god ggg god daa gto ooa gag ——————————————————————————————	
eog qoo aac gtg oto gaa atc gag tgg tog aag cag tat tto baa ——————————————————————————————————	
040 qct ccg age gcc gtc tat ggg ctg aac gat ctc atc aca ctg ggt 1240 Gly Ala Pro Jer Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly 405 410 415	
too qog etc aga acg dog ttc aag agt gtt dat ttd gtt gga acg gag — 1296 Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 420 — 425 — 430	
acq not tha gtt tgg aaa ggg tat atg gaa ggg god ata oga tog ggt 1344 Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 440 445	
caa cga ggt gct gca gaa gtt gtg gct agc stg gtg sca gca gca tag — 1392 Glm Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 450 — 455 — 460	
#210 + 53       #211 + 463       #212 PRT       #213 + Unknown	
<pre>&lt;220&gt; &lt;223&gt; Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera)</pre>	
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Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Ser Leu Val 20 25 30	
Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 45	
Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn 50 55 60	

Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln

Asp Ser Asn Gln Ser Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu 65 70 75 80

Asp	Gly	Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu
Glu	Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leu	Pro	Val	Trp 125	Ser	Gln	Leu
Ile	Glu 130	Glu	His	Ser	Leu	Gln 135	Asp	Leu	173	Alā	Ser 140	Pro	Gln	Ala	Lys
Arg 145	Leu	Asp	Ser	Val	3er 150	Phe	Alā	Hs:	Т;/г	Cys 155	GLu	Lys	Glu	Leu	Aan 160
Leu	Pirc	Ala	Val	Leu 165	Gly	Val	Alā	A.sri	Gln 170	Il€	Thr	Ārģ	Ala	Leu 175	Leu
Gly	Val	Glu	Ala 180	His	Glu	Ile	Ser	Met 185	Len	₽'nti€	Leu	Thr	Asp 190	Туг	Lie
Lys	Ser	Ala 195	Thr	Gly	Leu	Ser	Asn 200	Ile	Ph.e	Ser	Asp	Lys 205	Lys	Asp	Gly
Gly	Gln 210	Tyr	Met	Arg	Cys	Lys 215	Thr	G_7.	Mest	Gln	Ser 220	Ile	Ser	His	Alla
Met 225	Ser	Lys	Glu	Leu	Val 230	Pro	Gly	Ser	Vāl	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Alā	Ser	Gly	Cys 250	Thr	Val	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Val.	Ser	Leu	Pro 270	Thr	Thr
Leu	Туг	Pro 275	Thr	Leu	Thr	Phe	Ser 280	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln

Ala Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe

Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Leu

305 310 315

Gln	Ser	Ser	Ser	Asp 325	Pro	Ile	Ser	Phe	Ala 330	Arg	Asp	Thr	Ser	Ile 335	Asp
Val	Asp	Arg	Gln 340	Trp	Ser	Ile	Thr	Cys 345	Phe	Met	Val	Glγ	Asp 350	Pro	Sly
Arg	Lys	Trp 355	Ser	Gln	Glr.	Ser	Lys 360	Glr.	Val	Arg	Gln	Lys 365	Ser	Val	Trp
Asp	Gln 370	Leu	Arg	Ala	Alā	Tyr 375	Glu	Asr.	Ala	Gly	Ala 380	Glr	Val	Pro	Glu
Pro 385	Ala	Asn	Val	Leu	Glu 390	Ile	Glu	Trp	Ser	Lys 395	Gln	Glrı	Tyr	Phe	31n 400
Gly	Ala	Pro	Ser	Ala 405	Val	Tyr	Gly	Leu	Asn 410	Asp	Leu	Ile	Thr	Leu 415	Gly
Ser	Ala	Leu	Arg 420	Thr	Pro	Phe	Lys	Ser 425	Val	His	Phe	Val	Gly 430	Thr	Glu
Thr	Ser	Leu 435	Val	Trp	Lys	Gly	Туг 440	Met	Glu	Gly	Ala	Ile 445	Arg	Ser	Gly
Gln	Arg 450	Gly	Ala	Ala	Glu	Val 455	Val	Ala	Ser	Leu	Val 460	Pro	Ala	Ala	